ST. CLAIR COUNTY SOILS

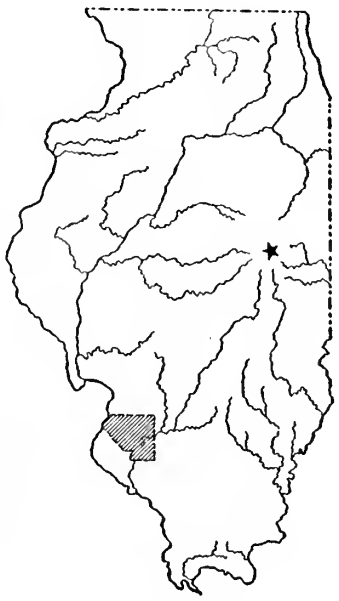
UNIVERSITY OF ILLINOIS

Agricultural Experiment Station

SOIL REPORT No. 63

ST. CLAIR COUNTY SOILS

GUY D. SMITH AND L. H. SMITH



URBANA, ILLINOIS, JUNE, 1938

"It must be remembered that the productive power of the soil is the basic support of all prosperity."

C. G. HOPKINS

"It is the duty of every landowner to see that his land when he leaves it is as good or better than when he received it."

J. G. MOSIER

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INTRODUCTORY NOTE

IT IS A MATTER of common observation that soils vary tremendously in their productive power, depending upon their physical condition, their chemical composition, and their biological activities. For any comprehensive plan of soil improvement looking toward the permanent maintenance of our agricultural lands, a definite knowledge of the various existing kinds or types of soil is a first essential. It is the purpose of a soil survey to classify the various kinds of soil of a given area in such a manner as to permit definite characterization for description and for mapping. With the information that such a survey affords, every farmer or landowner of the surveyed area has at hand the basis for a rational system for the improvement of his land. At the same time the Experiment Station is furnished a scientific inventory of the soils of the state; and with such an inventory as a basis it can proceed intelligently to plan those fundamental investigations so necessary for the solution of problems of practical soil improvement.

This county soil report is one of a series reporting the results of the soil survey which, when completed, will cover the state of Illinois. Each county report is intended to be as nearly complete in itself as it is practicable to make it, even at the expense of some repetition.

While the authors must assume the responsibility for the presentation of this report, it should be understood that the material for it represents the contribution of a considerable number of the present and former members of the Agronomy Department working in their respective lines of soil mapping, soil analysis, and experiment field investigation.

CONTENTS

ST. CLAIR COUNTY SOILS

By Guy D. Smith and L. H. Smith[1]

HISTORICAL AND GEOGRAPHICAL FEATURES

ST. CLAIR COUNTY lies in the southwest part of Illinois directly across the Mississippi river from St. Louis, Missouri. It occupies a total area of about 426,000 acres.

The first white settlement within the boundaries of what is now the county was made toward the close of the seventeenth century by French immigrants from Canada. St. Clair county, the first in Illinois, was organized by Governor St. Clair of the Northwest Territory in 1790 and at one time embraced the major portion of the state. The present boundaries of the county were established in 1825. Belleville is the county seat.

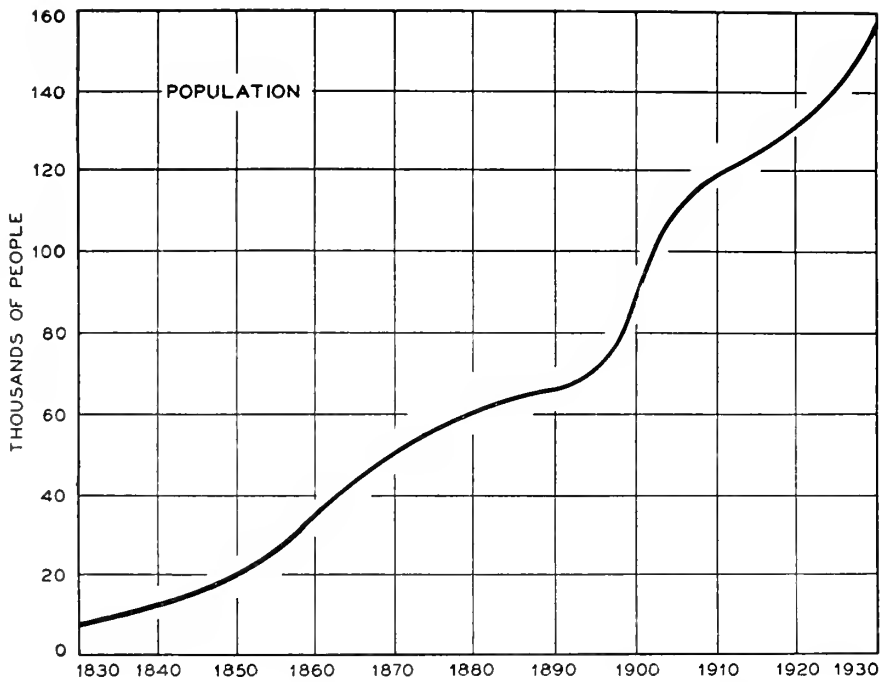

Fig. 1.—Growth of Population in St. Clair County

The development of urban communities in the neighborhood of St. Louis accounts for the high population of this county, which in 1930 was almost 160,000. This is double the number in the 1890's. The earliest Census, 1830, recorded 7,000 people.

The Census of 1930 reports 54,000 apple trees, 58,000 peach trees, and more than 4,000 acres devoted to vegetable crops. The value of the vegetable crops is given by the Census as $1,610,000 in 1920 and $609,000 in 1930. Horseradish, tomatoes, sweet corn, and asparagus are the principal vegetable crops.

[1]G. D. Smith, Associate in Soil Physics and Soil Survey, and L. H. Smith, Chief in Charge of Publications of the Soil Survey.

Between 1800 and 1830 settlers were largely of pioneer stock from Virginia and Kentucky, but between 1830 and 1860 there was a large influx of German immigrants. Since about 1860 the German influence has been predominant in the rural parts of the county.

Transportation facilities within the county are good. While a number of the smaller towns have no railroad outlet, the county is crossed by a network of paved highways which offer easy access to the markets of St. Louis. There is also an excellent system of oiled and graveled secondary roads connecting with the main highways. Some road changes have been made since 1931, when the soil survey was completed; and the map, therefore, does not show the roads correctly in all cases.

Agricultural Production

Agriculture was the first and has continued to be one of the important economic interests of St. Clair county. Winter wheat is the outstanding field crop from the standpoint both of acreage and of value. The total area devoted to this crop has averaged about 89,000 acres since 1924. According to Census reports, the yield has averaged 14.1 bushels to the acre over that period. Corn has been

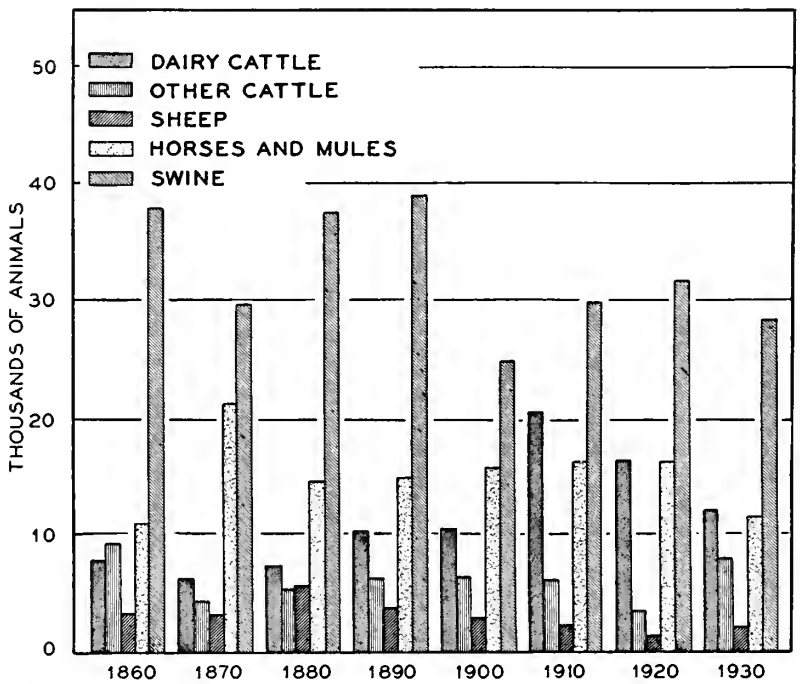

FIG. 2.—PRODUCTION OF PRINCIPAL CLASSES OF LIVESTOCK IN ST. CLAIR COUNTY

From less than 10,000 head in the 1860's to 1880's, the number of dairy cattle had doubled by 1910, after which there was a marked decline. Only a moderate number of other cattle has ever been produced in this county, the number of head ranging around 5,000 in recent decades. The number of sheep also has been small, amounting to only two or three thousand. Horses and mules have remained fairly constant in number during the last half century, but in proportion to the increasing population, they have greatly diminished, which is in harmony with the general trend thruout the country to substitute mechanical power for horse power. The number of swine has fluctuated around 30,000, but in proportion to the increasing population it has markedly declined.

the second most important field crop in St. Clair county, having occupied an average area of 56,000 acres since 1924 and yielded an average of 31 bushels to the acre. About 31,000 acres have been given over to oats each year, which have yielded an average of 28 bushels to the acre. The acreages of other grains have been very small.

There has been a remarkable expansion during the past fifteen years in the acreage devoted to alfalfa and sweet clover. The Census reports that 13,000 acres were seeded to sweet clover in 1936 and that 11,500 acres were in alfalfa. Fruits and vegetables constitute another important source of farm income. Close and easy access to the markets of St. Louis and a number of soils well adapted to fruit and vegetable production have led to the development of an important trucking center in the American bottoms and on some of the adjacent upland soils.

Some conception of the livestock interests of St. Clair county may be gained from Fig. 2, in which the number of horses and mules, dairy cattle, other cattle, sheep, and swine on the farms are represented graphically at ten-year intervals beginning with the year 1860. Poultry and egg production are also important sources of income.

Climate

The humid, temperate climate of St. Clair county is characterized by a wide range in temperature between the extremes of winter and summer and a somewhat irregularly distributed rainfall. The mean summer temperature during the thirteen-year period from 1924 to 1936 inclusive, as taken from records of the Mascoutah Weather Station, was 76.8° F. while that of winter was 35.8° F. The highest temperature recorded during this period was 113° F. and the lowest was — 20° F.

The average date of the last killing frost in spring during this thirteen-year period was April 20; the earliest in the fall, October 20; giving an average frost-free season of 183 days. The shortest growing season recorded was 138 days in 1925, and the longest 232 days in 1929. The average length of the growing season in this region gives ample time to mature the crops commonly grown, and only rarely do early frosts catch such crops as corn and soybeans before they have fully matured.

The average annual rainfall recorded at the Mascoutah Station during the thirteen-year period has been 37.63 inches. The yearly rainfall varied from a minimum of 27.15 inches to a maximum of 53.3 inches. There is likewise a great variation in the rainfall during the growing season. The average rainfall from May to September inclusive during this same thirteen-year period was 17.7 inches. The minimum rainfall for any one year during these five months was 9.76 inches in 1936 and the maximum was 23.57 in 1931. The total rainfall during the growing season is usually adequate for good crops but its poor distribution sometimes limits yields.

In this thirteen-year period there were 22 periods of 21 days or longer during which there was less than half an inch of rain within 24 hours. In 1933 no rain exceeding half an inch fell for 96 days. Data from the Lebanon experiment field indicate that corn is likely to suffer to some extent from moisture deficiency one year in two.

Topography and Drainage

The drainage of the uplands in St. Clair county varies with the topography and the permeability of the subsoil. In general, there is very little drainage difficulty in the uplands which lie to the west of Silver creek and to the north of Millstadt. South of a line drawn east and west thru Millstadt, the more level upland and terrace soils which have little or no surface drainage also have a slowly permeable subsoil which renders drainage difficult.

The bottomlands along Kaskaskia river and Silver creek are, in general, very poorly drained and can be cultivated only in patches. The Mississippi river bottoms, although protected against overflow, have many areas with inadequate drainage because of the heavy nature of the alluvial deposits.

FIG. 3.—SINK HOLE TOPOGRAPHY

In southwestern St. Clair county sink holes are numerous and frequently interfere with the cultivation of the land. These depressions have been formed by the eroding away of the surface blanket of glacial deposits thru small fissures in the underlying limestone.

Extending east several miles from the bluff near Dupo is an area underlain at a shallow depth by limestone in which numerous sink holes have formed (Fig. 3), varying in size between a quarter of an acre and 20 acres. These sink holes have been formed by the eroding away of the surficial blanket of glacial deposits thru small fissures in the limestone and not by the collapse of underground caverns. They present no hazard to the safety of farm buildings, but they do seriously interfere with the cultivation of the land. In some instances the fissures in the limestone have become sealed, forming temporary or permanent ponds which have recreational value.

FORMATION OF ST. CLAIR COUNTY SOILS

Origin of Soil Material

The material from which the upland soils of St. Clair county have developed was deposited toward the close of the Glacial Epoch. The bottomland soils have developed from sediments derived largely from glacial material but reworked and deposited in recent times by the streams.

The climate during the Glacial Epoch alternated between intervals during which the climate was much like that of today and intervals when the average temperature was low enough to permit the accumulation of vast quantities of snow and ice. During these colder intervals the snow and ice accumulated on the northern parts of this continent in such amounts that the mass pushed outward from the centers of accumulation, forming glaciers. These glaciers, aided by further accumulations of snow and ice at their margins, moved southward until they reached a region where the climate was warm enough to melt the ice as rapidly as it advanced. In moving across the country, the ice sheet gathered up masses of rock, gravel, sand, and clay and sometimes carried them for hundreds of miles. The pressure of the moving ice leveled off hills and filled old valleys, greatly changing the features of the surface over which it passed. The deposits of rock material are known as glacial till, glacial drift, or boulder clay, terms which frequently appear in the descriptions of soils.[1]

St. Clair county was covered by at least two of the four major advances of the ice from the north. The last one to cover St. Clair county was the Illinoian. Its retreat was followed by a long warm period during which soils were formed on the glacial deposits left by the ice. The last of the ice sheets, the Wisconsin, did not touch St. Clair county but did cover the headwaters of the Illinois, Mississippi, and Kaskaskia rivers. Thus when the Wisconsin ice sheet melted, it supplied a large volume of muddy water which spread out over the flood plains of Mississippi and Kaskaskia rivers in St. Clair county and deposited some of its burden of sand, silt, and clay. Presumably each winter when cold checked the melting of the ice sheet, the flood waters receded, exposing large mud flats. As soon as these flats were dry, the wind picked up the fine sediments and redeposited them upon the upland, forming deposits of uniform texture called "loess" (see Fig. 4). This loess is the parent material from which the upland soils of St. Clair county have been derived. The thickness of the loess deposit, except where it has been removed by erosion, varies from more than 30 feet near the bluff between Frenchvillage and Caseyville to less than 4 feet near Darmstadt. The flood plains of Kaskaskia river were a minor source of loess compared with those of Mississippi river

It is generally recognized locally that both the light- and dark-colored soils become progressively poorer as the distance from the Mississippi river bottoms increases. The explanation for this is found in the greater depth of loess, as well as in the larger amount of more recently deposited loess near the bluffs. As a

[1]As defined by the Illinois State Geological Survey, glacial "drift" includes all material, stratified or unstratified, of glacial origin, whether deposited by the ice itself or by glacial waters; "till" is unstratified drift exclusively deposted from the ice directly.

result of these two conditions, the content of available plant-food elements and the ease with which the land is drained are greater in both the light- and dark-colored soils near the Mississippi river bluff than farther to the east.

How the Soils Were Developed

It should be understood that the deposition of the loess did not take place within a single year but continued to be deposited presumably over thousands of years. The loess, immediately upon deposition, was subjected to the action of weathering forces and thus the processes of soil development began. When first deposited, the unweathered loess was pale yellowish in color, of an open, porous structure, high in lime content, and amply supplied with the mineral elements of plant food.

FIG. 4.—LOESS IN THE MAKING

The upland soils of St. Clair county owe their productivity largely to the silty wind-blown material, called loess, deposited near the close of the ice age by dust storms similar to the one pictured above. The American bottoms were the source of most of the dust. This picture was taken in Texas in the spring of 1935. (*Photo by courtesy of U. S. Soil Conservation Service.*)

The rain water, the oxygen and carbon dioxid of the air, and products of the decaying plant remains attacked the minerals of the loess, leaching out the free lime and reducing some of the minerals to clay. Since the weathering forces are most active near the surface and decrease in activity with increasing depth, various degrees or stages of weathering occur at different depths. Thus carbonates are leached first from the surface and it is there that decomposition of the minerals is more active. Likewise, organic matter accumulates in the surface soil to a much greater extent than at greater depths, as indicated by the darker color of the surface. The clay particles formed at or near the surface are gradually carried down by the percolating waters to a point where they are filtered out by the soil mass and accumulate, forming a clay subsoil. Thus horizons

are gradually formed and the parent material acquires characteristics that permit it to be called a soil.

During the period when clay is forming rapidly in the surface and before appreciable amounts have been carried down into the subsoil, the horizons of the soil are but faintly developed and the soil is said to be young or in an early stage of development. As weathering continues, the soil characteristics become more clearly developed and the horizons more sharply defined. The soil is thought of as becoming progressively older until finally the old-age stage is reached.

Fig. 5.—Studying the Soil Profile

One of the very important characteristics observed in most soils is that they are composed of more or less distinct layers, or strata, often spoken of in soil literature as "horizons." The vertical section of the soil showing the arrangement of the horizons from the surface down is called the "soil profile."

The soils of St. Clair county vary greatly in stage of development. The bottomland soils that receive frequent deposits of soil material, as well as the upland soils that are subject to rapid erosion, show little or no development because the soil material has been so recently deposited or so recently uncovered by erosion that the weathering processes have not had long to act. The upland soils, excluding the areas influenced by erosion, vary in stage of development from those not having distinct horizons to those with strongly developed surface, subsurface, and subsoil zones. These differences are due both to differences in the intensity of the action of the weathering forces and to differences in the thickness of the loess blanket, discussed under the preceding section on the origin of soil material. In general, other factors being equal, the thinner the loess blanket the more advanced is the development of the soil and the less productive it is.

Soil-forming processes do not act with uniform intensity from spot to spot but are influenced by the slope of the land, the moisture supply, the native vege-

tation, and other factors. Grass, thru its extensive fibrous root system, adds to the soil much organic matter which, being nonacid, retards somewhat the action of the weathering forces. Trees, in contrast, create in the soil an acid condition which accelerates weathering; and the forest litter, being subject to rapid and complete decay, adds relatively little organic matter to the soil. Impeded drainage, which is one of the factors influencing the moisture supply, tends to retard the decomposition of the organic matter of the soil but favors mineral decomposition and clay formation. In parts of St. Clair county the drainage has been restricted to a point where soluble salts of sodium have accumulated, forming "scalds" or slick spots, which often are markedly unproductive.

Thus we see that differences in drainage, topography, vegetation, and parent material bring about differences in the environment under which soils develop and consequently in any given region various kinds of soils will be found.

SOIL CLASSIFICATION AND MAPPING

In the soil survey the "type" is the unit of classification. Each soil type has definite characteristics upon which its separation from other types is based. These characteristics are inherent in the strata or horizons which, taken together, constitute the soil profile. Among them may be mentioned color, structure, texture, and chemical composition.

Failure to appreciate that soil types are differentiated on the basis of the character of the entire soil section, and not on the surface alone, often makes it difficult to understand what is meant by "soil type." It frequently happens that the surface stratum of one type is no different from that of another, and yet the two types may be widely different in character as well as in agricultural value. It is of utmost importance, therefore, in studying descriptions of soil types to get a clear mental picture of the outstanding features of each type.

It is likewise important to understand that a given type must of necessity include a range in properties. The boundaries between soil types are seldom sharp. Rather, there is frequently a transitional band which includes some of the properties of each type. The determination of the limits of the variability of a soil type is one of the most difficult problems of the soil surveyor.

Besides the natural range in properties that is found within a given soil type, there are other variations that have been brought about by differences in the management of the soil since it has been under cultivation. For example, the productive capacity of soils developed on rolling topography may be easily impaired by management practices which encourage soil erosion. Changes of this nature, which involve the loss of soil material, result in permanent soil differences. Other differences of a temporary nature may be induced by poor rotations which lower the present productivity without necessarily impairing potential or inherent productivity.

A list of the soil types occurring in St. Clair county is given in Table 1, where are shown also the area of each type in square miles and in acres and the percentage that each constitutes of the total area of the county.

On the accompanying map are shown the location and boundary of each soil type, the position of roads, streams, railroads, towns, farm dwellings, school-

TABLE 1.—ST. CLAIR COUNTY SOILS: AREAS OF THE DIFFERENT SOIL TYPES

Type No.	Type name	Area in square miles	Area in acres	Percent of total area
2	Cisne silt loam	.02	13	.01
3	Hoyleton silt loam	.14	90	.02
5	Eroded silt loam	2.88	1 840	.32
12	Wynoose silt loam	7.08	4 530	.94
13	Bluford silt loam	24.22	15 500	3.53
14	Ava silt loam	1.44	920	.21
46	Edina silt loam	38.24	24 470	5.72
47	Shiloh silt loam	3.93	2 520	.58
48	Ebbert silt loam	1.42	910	.20
70	Beaucoup clay loam, bottom	34.45	22 000	5.17
72	Sharon loam, bottom	35.67	22 830	5.25
75	Drury fine sandy loam, bottom	18.27	11 690	2.63
84	Okaw silt loam, terrace	12.49	7 990	1.76
86	Keyesport silt loam	2.31	1 480	.33
92	River sand, bottom	1.69	1 080	.24
94	Limestone outcrop	.86	550	.12
108	Bonnie silt loam, bottom	40.15	25 700	6.02
109	Racoon silt loam, terrace	1.95	1 250	.28
110	Venedy silt loam, terrace	1.80	1 150	.26
111	Ora silt loam	3.92	2 510	.58
112	Putnam silt loam	30.04	19 230	4.41
113	Cox silt loam	33.81	21 640	5.07
121	Wade silt loam	2.84	1 820	.42
122	Eroded clay loam	4.27	2 730	.63
127	Harrison silt loam	47.38	30 320	7.02
128	Douglas silt loam	17.66	11 300	2.54
161	Newart silt loam, bottom	6.57	4 200	.98
162	Gorham clay loam, bottom	1.98	1 270	.28
164	Bluford silt loam, immature phase	78.27	50 090	11.65
165	Wynoose silt loam, immature phase	17.79	11 390	2.65
168	Flora silt loam, terrace	1.21	770	.17
169	Freeburg silt loam, terrace	2.79	1 790	.41
170	Breese silt loam	11.03	7 060	1.55
175	Unity sandy loam, terrace	1.97	1 260	.29
177	Orio silt loam, terrace	.13	80	.01
179	Lenz silt loam, terrace	1.05	670	1.57
180	Dupo silt loam, bottom	4.48	2 870	.66
181	Riley fine sandy loam, bottom	17.07	10 920	2.55
214	Ava silt loam, immature phase	84.26	53 930	12.64
216	Eroded silt loam in youthful and immature areas	64.01	40 970	9.71
R.Q.	Rock quarry	.50	320	.07
S.M.	Strip mine	.04	27	.01
	Water	3.62	2 320	.54
	Total	665.70	426 000	100.00

houses, and various other identifying features. The cultural features in and around East St. Louis, together with the locations of the special surveys, were taken in large part from the topographic maps of the Geological Survey.

GENERAL SUGGESTIONS FOR SOIL IMPROVEMENT

Assuming that the principal cash crops in St. Clair county will be corn and wheat, and that adequate drainage has been established, what briefly are some of the more important things that a farmer or landlord who wishes to increase the productivity of his land should do?

The first step is the correction of soil acidity. This involves the testing of each field for acidity and the application of limestone as needed. For detailed in-

structions for collecting samples and making the tests, see Circular 346, "Test Your Soil for Acidity," which may be obtained free of charge upon application to the Agricultural Experiment Station, Urbana, Illinois. If the procedure is not altogether clear, the county farm adviser should be consulted regarding the testing before the work is undertaken.

With the correction of soil acidity, the second step in a soil-improvement program—*the building up of the supply of available nitrogen*—can be undertaken. Under a livestock system, where the major part of the grain and hay grown on the farm is fed to livestock and the manure returned to the fields, a fairly satisfactory nitrogen level can often be maintained, without additional treatment. When a cash grain system of farming is being followed, however, it is necessary to grow and plow under green-manure crops such as sweet clover if the nitrate level is to be maintained. Whichever method is followed, it is essential that the soil be sweet if the best results are to be obtained. An example of such a situation is afforded by the Ewing experiment field, where the soil is light colored and acid. Twenty-five consecutive corn crops have averaged 23 bushels an acre where only manure has been applied, but where both manure and limestone have been used, the average yield has been 41 bushels. Nineteen consecutive wheat crops have averaged 7 bushels to the acre where manure alone has been applied, but have averaged 24 bushels where both manure and limestone have been used.

After taking care of any need for lime and nitrogen, *a farmer should next test his fields for phosphate and potash.* Instructions for taking the samples and making the tests will be found in the following publications, which may be obtained free of charge on request to the Agricultural Experiment Station, University of Illinois, Urbana.

Circular 421—Testing Soil for Available Phosphorus
Mimeographed folder—The Illinois Potash Test

Again, those who desire help with the test should see the county farm adviser, or else write directly to the Agricultural Experiment Station, Urbana, Illinois.

When both phosphate and potash are low, the application of either one by itself will do very little good. For maximum crop yields, it is essential to maintain adequate supplies of available nitrogen, phosphorus, and potash in the soil thru the growing season. If any one of these three elements is present in insufficient amount, crop yields will be reduced, no matter how ample the supply of the other two elements may be. Therefore, in order to make use of the nitrogen supplied by the growing and plowing under of legumes, a farmer must be sure that his soil contains ample phosphate and potash. It is for the purpose of obtaining this information that the phosphorus and potash tests have been devised. It may be said with respect to potash that it seldom becomes the limiting element until several crops of sweet clover have been plowed under (see Fig. 6). Nitrogen and phosphorus are most apt to be the limiting elements where sweet clover has never been grown.

In general, a farmer who has enough livestock to consume all his grain and roughage can keep up the producing capacity of his soil by the use of lime, manure, and legumes grown for hay or pasture; but where the original fertility of the land was low, some form of phosphate fertilizer will probably be needed

ST. CLAIR COUNTY
SOIL MAP

THE LOCATION of each soil type in St. Clair county is indicated on this map (consisting of three sections). The positions of streams, roads, railroads, and towns also are shown in order to help one in locating a particular farm or region. A distinctive color and a number are used to identify each soil type.

For a description of each type and a statement of its best use and recommended management, see pages 13 to 36, consulting *Contents*, page 2, for precise page references.

CONVENTIONAL SIGNS

- House
- School House
- Church
- Store building
- Paved Through Routes
- Metalled (all weather) roads
- Improved Dirt roads
- Secondary Dirt and Private roads
- Railroads (steam)
- Railroads (electric)
- Township boundary lines
- County boundary lines
- State boundary lines
- Levee
- Streams (flowing)
- Streams (intermittent)
- Lakes or ponds
- Swamps
- Small areas limestone outcrop
- Mine dump (MD)
- Strip mine (SM)
- Indian mound (IM)
- Rock quarry (RQ)
- Brickyard (BY)
- Small sink holes
- Large sink holes

LEGEND

2	Cisne silt loam	108	Bonnie silt loam, bottom	170	Breese silt loam
3	Hoyleton silt loam	109	Racoon silt loam, terrace	175	Unity sandy loam, terrace
5	Eroded silt loam	110	Venedy silt loam, terrace	177	Orio silt loam, terrace
12	Wynoose silt loam	111	Ora silt loam	179	Lentz silt loam, terrace
13	Bluford silt loam	112	Putnam silt loam	180	Dupo silt loam, bottom
14	Ava silt loam	113	Cox silt loam	181	Riley fine sandy loam, bottom
46	Edina silt loam	121	Wade silt loam	214	Ava silt loam, immature phase
47	Shiloh silt loam	122	Eroded clay loam	216	Eroded silt loam in youthful and immature areas
48	Ebbert silt loam	127	Harrison silt loam		Slick spots occupy over 50 per cent of area
70	Beaucoup clay loam, bottom	128	Douglas silt loam		
72	Sharon loam, bottom	161	Newart silt loam, bottom		
75	Drury fine sandy loam, bottom	162	Gorham clay loam, bottom		
84	Okaw silt loam, terrace	164	Bluford silt loam, immature phase		
86	Keyesport silt loam	165	Wynoose silt loam, immature phase		
92	River sand, bottom	168	Flora silt loam, terrace		
94	Limestone outcrop	169	Freeburg silt loam, terrace		

R. S. Smith, In Charge Soil Survey
E. A. Norton, Inspector

SOIL SURVEY MAP OF [illegible] CL

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OF ST. CLAIR COUNTY

CULTURAL EXPERIMENT STATION

LEGEND

2	Cisne silt loam	86	Keyesport silt loam	161	Newart silt loam, bottom
3	Hoyleton silt loam	92	River sand, bottom	162	Gorham clay loam bottom
5	Eroded silt loam	94	Limestone outcrop	164	Bluford silt loam, immature phase
12	Wynoose silt loam	108	Bonnie silt loam, bottom	165	Wynoose silt loam, immature phase
13	Blutord silt loam	109	Racoon silt loam, terrace	168	Flora silt loam, terrace
14	Ava silt loam	110	Venedy silt loam, terrace	169	Freeburg silt loam, terrace
46	Edina silt loam	111	Ora silt loam	170	Breese silt loam
47	Shiloh silt loam	112	Putnam silt loam	175	Unity sandy loam, terrace
48	Ebbert silt loam	113	Cox silt loam	177	Orio silt loam, terrace
70	Beaucoup clay loam, bottom	121	Wade silt loam	179	Lentz silt loam, terrace
72	Sharon loam, bottom	122	Eroded clay loam	180	Dupo silt loam, bottom
75	Drury fine sandy loam, bottom	127	Harrison silt loam	181	Riley fine sandy loam, bottom
84	Okaw silt loam, terrace	128	Douglas silt loam	214	Ava silt loam, immature phase

216 Eroded silt loam in youthful and immature areas

Slick spots occupy over 50 per cent of area

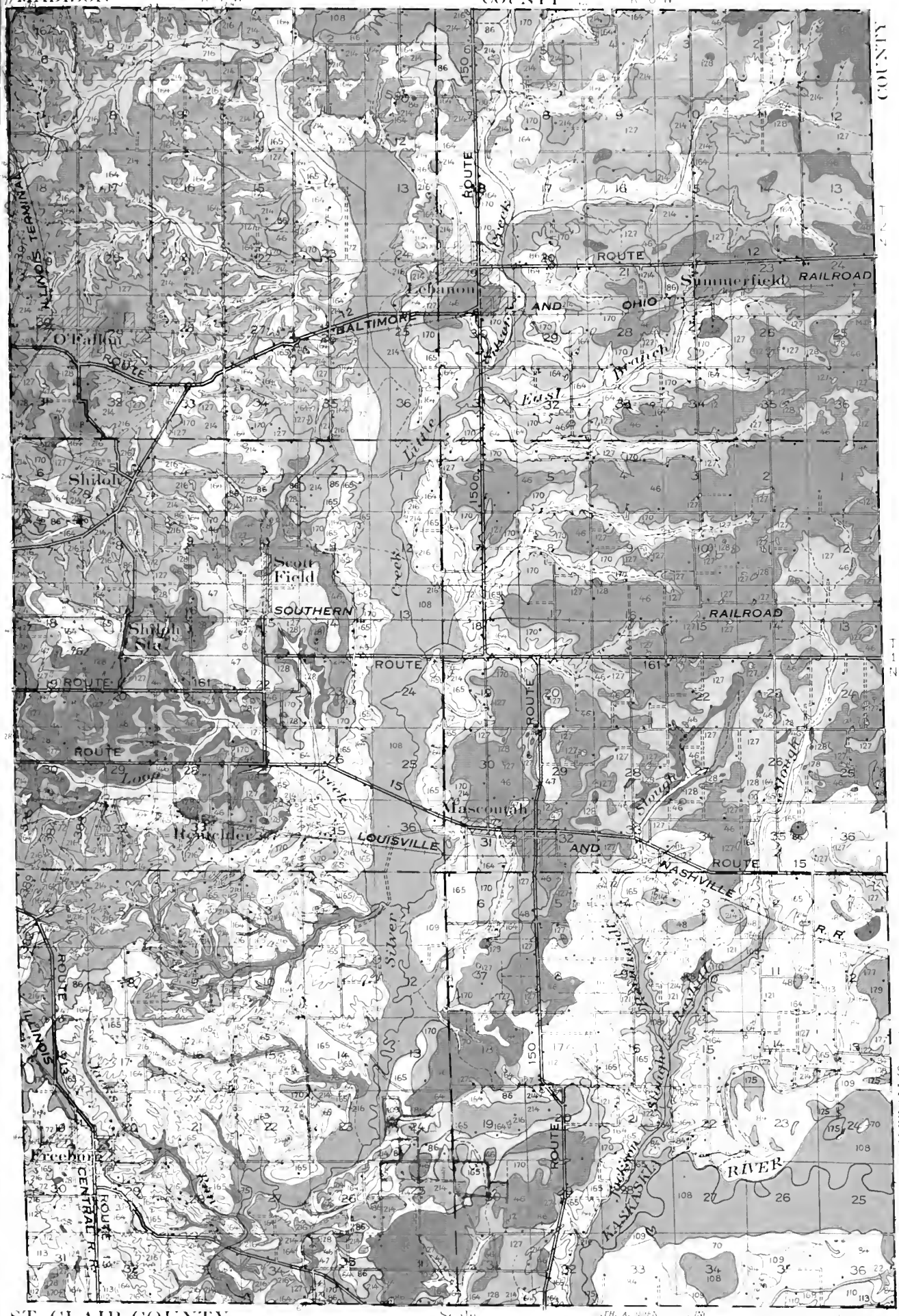
CONVENTIONAL SIGNS

- House
- School House
- Church
- Store building
- Paved Through Routes
- Metalled (all weather) roads
- Improved Dirt roads
- Secondary Dirt and Private roads
- Railroads (steam)
- Railroads (electric)
- Township boundary lines
- County boundary lines
- State boundary lines
- Levee
- Streams (flowing)
- Streams (intermittent)
- Lakes or ponds
- Swamps
- Small areas limestone outcrop
- Mine dump
- Strip mine
- Indian mound
- Rock quarry
- Brickyard
- Small sink holes
- Large sink holes

R S Smith, In Charge Soil Survey
E A Norton, Inspector

SOIL SURVEY MAP

UNIVERSITY OF ILLINOIS AGRI



MAP OF ST. CLAIR COUNTY

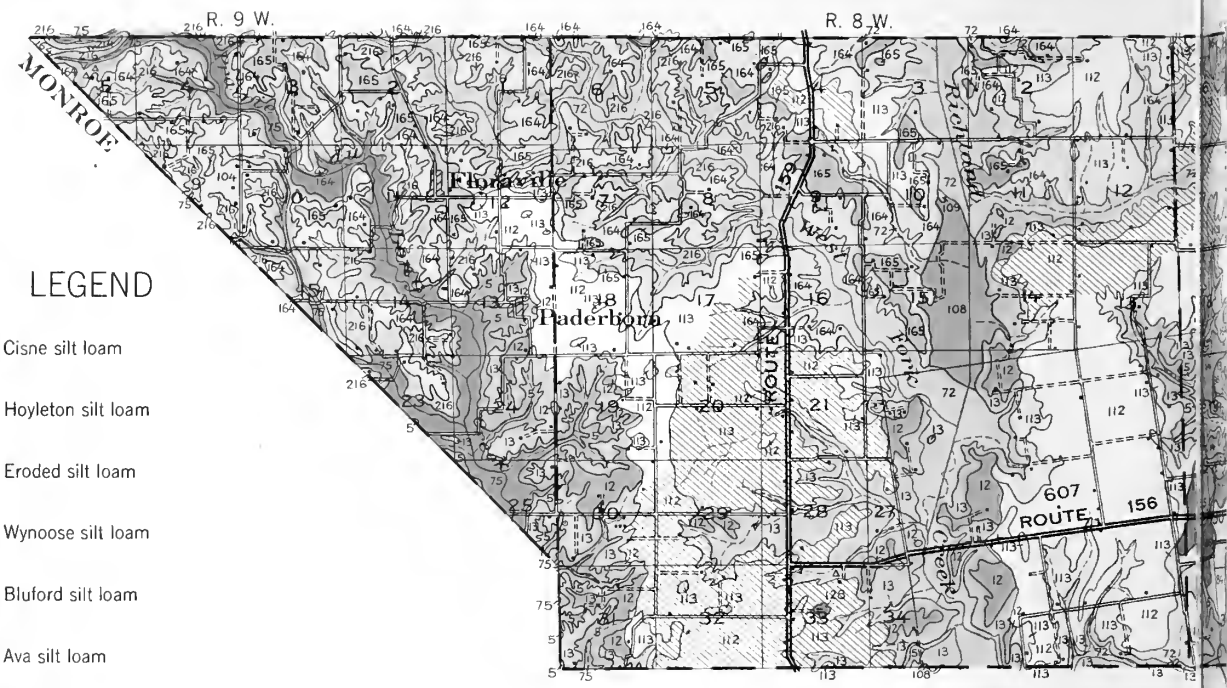
AGRICULTURAL EXPERIMENT STATION

Scale

Miles

Surveyed By
L. C. Mayne, in Charge
G. D. Smith
J. E. Greening

1931



LEGEND

2	Cisne silt loam
3	Hoyleton silt loam
5	Eroded silt loam
12	Wynoose silt loam
13	Bluford silt loam
14	Ava silt loam
46	Edina silt loam
47	Shiloh silt loam
48	Ebbert silt loam
70	Beaucoup clay loam, bottom
72	Sharon loam, bottom
75	Drury fine sandy loam, bottom
84	Okaw silt loam, terrace
86	Keyesport silt loam
92	River sand, bottom
94	Limestone outcrop
108	Bonnie silt loam, bottom
109	Racoon silt loam, terrace
110	Venedy silt loam, terrace
111	Ora silt loam
112	Putnam silt loam
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165	Wynoose silt loam, immature phase
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169	Freeburg silt loam, terrace
170	Breese silt loam
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	Slick spots occupy over 50 per cent of are

CONVEN NAL

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- School House
- Church
- Store building

- Paved Through Routes
- Metalled (all weather) roads
- Improved Dirt roads
- Secondary Dirt and Private roads

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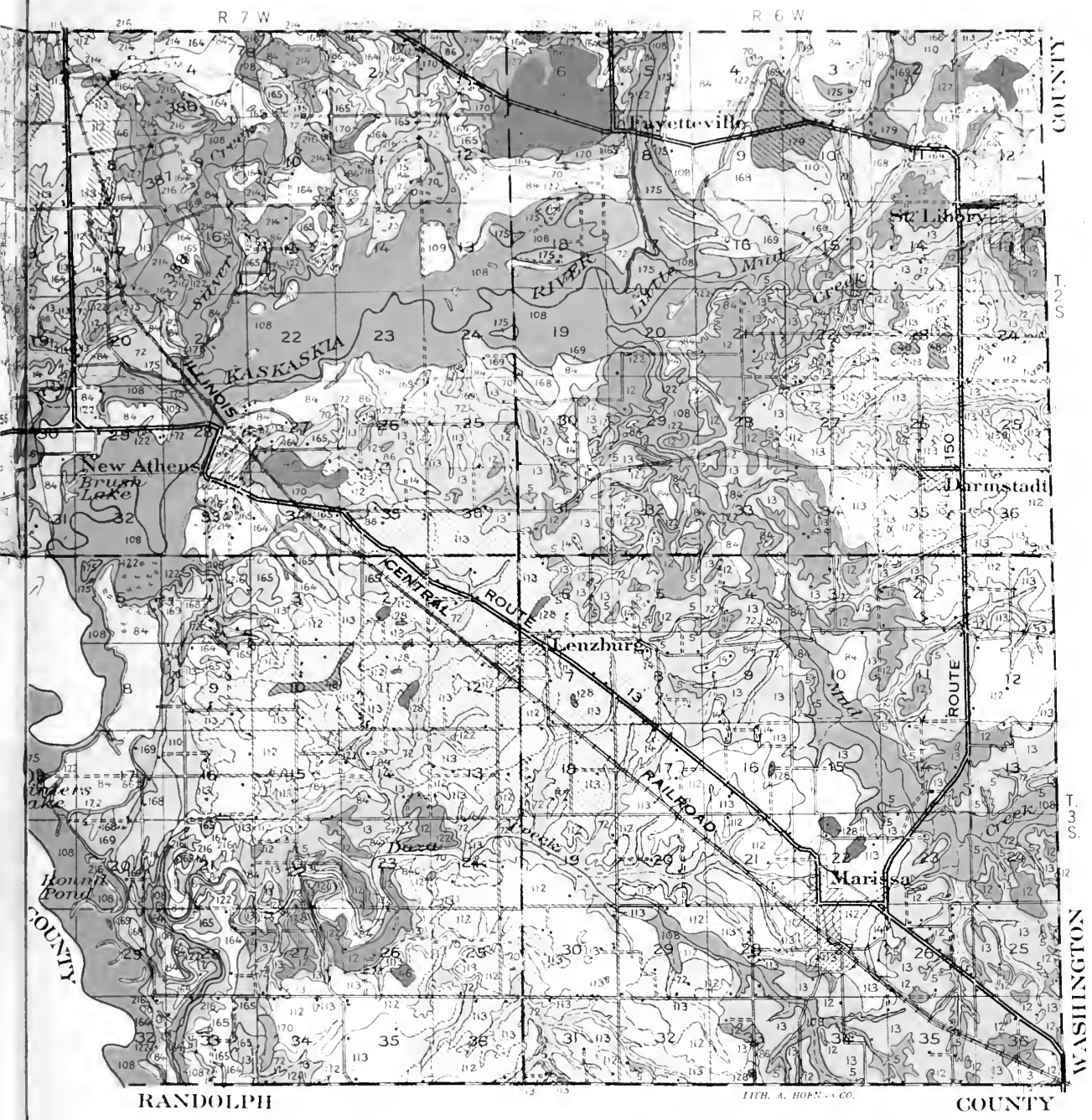
- Railroads (electric)
- Township boundary lines
- County boundary lines

- State
- Levee
- Strear
- Strear

SOIL SURVEY MAP

UNIVERSITY OF ILLINOIS AGRI

SOUTHEAST SHEET



LITH. A. HOEN & CO.

R S Smith In Charge Soil Survey
E A Norton Inspector

Scale
0 ½ 1 2 Miles
1931

Soils Surveyed by
D C Maxwell, in Charge
G D Smith
J E Gieseking

NAL SIGNS

- dary lines
- Lakes or ponds
- Swamps
- flowing)
- Small areas limestone outcrop
- intermittent)
- Mine dump
- Strip mine
- Indian mound
- Rock quarry
- Brickyard
- Small sink holes
- Large sink holes

F ST. CLAIR COUNTY

ILTURAL EXPERIMENT STATION

for such crops as wheat and alfalfa. If a grain system of farming is followed, best yields are obtained by plowing under sweet clover at frequent intervals and adding phosphates and potash whenever they become deficient. If a farmer desires to hold down his original investment in phosphate and potash, perhaps the best method is to drill some form of readily available phosphate, such as superphosphate, with the wheat in the rotation, together with a potash fertilizer if needed.

Finally, a farmer must consider the long-time effects of soil erosion. This is mentioned last, not because it is least important, but because in general the best method of controlling erosion is to keep a good vegetative cover on the land as many months as possible each year. Since this cannot be done on a poor soil, the application of lime, phosphate, and potash, as needed, must therefore be a part of any permanent program of erosion control. More detailed information regarding erosion control will be found in Farmers' Bulletin 1795, "Conserving Corn Belt Soil," published by the U. S. Department of Agriculture, Washington, D. C.

SOIL TYPES OF ST. CLAIR COUNTY, THEIR USE, CARE, AND MANAGEMENT

Forty soil types have been mapped in St. Clair county. A brief description of each type, together with recommendations for its use and management, is presented in the following pages. A summary of this information, including only the more important characteristics, together with the index number, or "rating," of each type for crops, pasture, and timber, is given in Table 2 on pages 35 and 36 of this report.

The recommendations made herein for the utilization of individual soil types are based on the capacity of the types to produce crops common to the region, as determined by the inherent characteristics of the soil. To outline a complete soil-improvement and management program for a field or farm, one would need to know not only what soil types are involved and what cropping and management practices have been followed in the past but also what type of farming is planned for the future. Obviously not all these details are available. The purpose of this report, therefore, is to furnish such information about the various soil types as is essential to the development of a well planned soil-management system.

Cisne silt loam (2)

Cisne silt loam is a minor type in St. Clair county, occupying only 13 acres in the extreme southeast corner of the county. It occurs on level topography.

The surface soil, which is about 6 inches thick, is a friable gray silt loam. The subsurface is a light-gray ashy silt loam 12 to 14 inches thick. The subsoil, beginning at 18 to 20 inches, is a gray compact and plastic clay nearly impervious to water.

Use and Management.—The recommendations made for the management of Wynoose silt loam, Type 12, page 15, apply to Cisne silt loam also.

Hoyleton silt loam (3)

Hoyleton silt loam is a minor type, occupying only 90 acres in St. Clair county. It is found on undulating topography in the southeastern corner of the county.

The surface is a friable brownish-gray silt loam 5 to 7 inches thick. The subsurface is a yellowish-gray silt loam with some orange mottling. The subsoil, which begins at a depth of 15 to 18 inches, is a compact and plastic clay of a pale yellowish-gray color with orange mottlings.

Use and Management.—The recommendations made for Bluford silt loam, Type 13, page 16, apply to this soil also.

Eroded silt loam (5)[1]

Eroded silt loam, now known as Cahokia silt loam, is confined to the steep slopes along the streams in the south-central and south-eastern parts of the county. It occupies a total of about 1,800 acres.

There is little or no soil development in this type because the surface material has been washed away almost as rapidly as the weathering processes have operated to form soil. The soil material is usually of a silty nature, having been deposited by wind, but in some places where the loess blanket is thin, the underlying weathered Illinoian drift has been exposed, and the soil material is sandy or gravelly.

Use and Management.—Eroded silt loam is subject to destructive erosion. The gentler slopes can be used for permanent pasture or even orcharding, provided a grass sod is maintained. Limestone and phosphate applications will help secure a good sod, but care must be exercised to prevent overgrazing if erosion is to be controlled. The steeper slopes should be kept in timber, or replanted to trees if the land has been cleared. None of this type can be cultivated over a period of years without being destroyed by erosion.

Wynoose silt loam (12)

Wynoose silt loam occurs on the nearly level slowly drained upland in the southern third of the county, that is now or was formerly covered by a mixed hardwood deciduous forest. This soil type occupies about 4,500 acres in St. Clair county.

The surface soil is from 4 to 6 inches thick and is a light brownish-gray friable silt loam with a pale yellowish cast. The subsurface is a friable silt loam, pale yellowish-gray in the upper part and light-gray and ashy in the lower. The subsoil, beginning at 15 to 20 inches beneath the surface, is a pale yellowish-gray very compact and very plastic clay that becomes somewhat less plastic and less compact below 40 inches. Weathered Illinoian drift is present below 60 to 70 inches. Small slick spots sometimes occur in association with this type. These spots are discussed on pages 24 and 25.

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[1]Subsequent to the publication of the St. Clair county soil map, the name Eroded silt loam was changed to Cahokia silt loam. All references to this type in later published material will be found under the latter name.

Use and Management.—The productivity of Wynoose silt loam when untreated is very low. Lack of sufficient slope to carry away surface water and the impervious nature of the claypan subsoil, make the drainage problem very difficult. Fortunately many of the areas of this type occur within a short distance of an established drainage channel, and open ditches and furrows are often effective in carrying away surplus water. All attempts to tile this land have been unsuccessful because of the slowly pervious subsoil. Not only does the subsoil impede the movement of moisture, but it also restricts the penetration of roots, thus causing shallow rooting.

Wynoose silt loam is low in organic matter, nitrogen, phosphorus, and potash, and is strongly acid. After drainage has been properly established, each field

Fig. 6.—A Demonstration of Potash Deficiency, Ewing Field, Franklin County

At the *right* limestone and phosphate have been applied and sweet clover plowed under, but no potash has been added. At the *left* potash has been applied in addition to lime and phosphate. On light-colored poorly drained soils a serious potash deficiency is apt to develop after several crops of sweet clover have been plowed under.

should be tested for its lime requirement, as explained in Circular 346. Experiment fields located on this type have proved lime to be the basic treatment for soil improvement. Satisfying the lime requirement will make it possible to grow and turn under sweet clover and thus increase the organic-matter and nitrogen contents. Heavy manure applications, if the soil has been limed, will also build up the organic-matter and nitrogen contents and in addition will supply phosphorus and potash. Tests should be made for phosphorus and potash (see page 12 for instructions) and applications made as needed, preferably phosphate for wheat and potash for corn.

Bluford silt loam (13)

Bluford silt loam is found in the southern third of the county on undulating to gently rolling topography along the stream courses. It is now or was formerly

covered by a mixed stand of hardwood timber. Its total area in the county is about 15,000 acres.

Surface drainage is moderately rapid, but owing to a compact subsoil, underdrainage is slow, forcing a high percentage of the rainfall to run off. This high runoff has created a serious problem of sheet erosion on the more rolling cultivated slopes. In many places much of the surface soil has already been removed, and small gullies are becoming established.

The surface soil is a friable brownish-gray silt loam 6 to 7 inches thick in the virgin condition. The subsurface is yellow in the upper part and pale yellow to almost gray in the lower part. The subsoil, beginning at 14 to 18 inches, is a medium-compact and plastic grayish-yellow clay. Below 40 inches the subsoil becomes less compact, and below 50 to 60 inches an old soil, formed on Illinoian drift, is present.

Use and Management.—An efficient soil-management program for Bluford silt loam must take into consideration the checking of sheet erosion. As previously mentioned, underdrainage is slow, and a large part of the rainfall runs off, thus creating an opportunity for erosion.

The basic soil treatment includes the application of limestone, phosphate and potash as needed, or limestone and manure (see page 11). Good soil treatment will make possible a vigorous growth of vegetation, including legumes, thereby aiding in erosion control. The control of sheet erosion by keeping a vigorous growing crop on the land should be supplemented as far as possible by contour farming. In some places diversion ditches may be desirable to divert runoff from other areas and permit the establishment of a good sod. Grass water-ways will permit the surface waters from other parts of the farm to drain over areas of Bluford silt loam without erosion. However, these grass water-ways must be maintained in good condition or erosion will start in them.

This soil, while relatively unproductive when untreated, responds well to good treatment and management. On the Enfield experiment field, on Series 100, where the soil is classified as Bluford silt loam, the following yields per acre have been secured as long-time averages from different soil treatments:

	Corn	*Wheat*
	bu.	*bu.*
No treatment	11.2	7.9
Manure	21.4	10.2
Manure and lime	28.2	19.5
Manure, lime and rock phosphate	31.0	24.1
Residues	14.7	9.9
Residues and lime	22.7	20.8
Residues, lime and rock phosphate	24.9	23.9
Residues, lime, rock phosphate and potash	34.5	28.7

These data indicate the need for lime on this soil under either a livestock or grain system of farming. It is also apparent that both phosphate and potash are able to produce significant crop increases, and this is particularly true under a grain system, where animal manure is absent. However, before either phosphate or potash is applied, the need for both should be determined, for if both are low and only one is applied, the results may be disappointing. In general phosphate should be applied for wheat and potash for corn.

Ava silt loam (14)

Ava silt loam is found on the rolling land in the southeastern part of the county. It occupies a total area of about 900 acres.

The surface soil is a friable brownish-yellow silt loam varying from zero to 6 inches in thickness depending on the amount of material removed from the surface by sheet erosion. The subsurface is friable and yellow in color. The subsoil begins at 6 to 12 inches and in its upper part is a reddish yellow slightly compact nonplastic silty clay loam which breaks upon rupture into large granules. The lower subsoil is more compact and the particles have thin gray coatings. Below 36 to 40 inches the material becomes loose and friable.

Use and Management.—Ava silt loam, if used for cropping, must be protected against soil erosion. The erosion-control program for this soil, to be successful, must make use of all the erosion-control devices known. In such a program it is basic to so treat the soil that a vigorous vegetative growth is secured and to so plan the cropping that a protective vegetative cover is on the ground as much of the time as possible. These practices should be supplemented by terraces and other mechanical structures where called for. Fall plowing should be avoided unless it is in preparation for a fall-seeded crop which will give effective protection. Unless a vigorous erosion-control program can be undertaken and carried thru, Ava silt loam should not be used for cultivated crops.

This soil is well adapted to vegetable, small-fruit, and orchard crops, because it dries out early in the spring and has good air drainage. It must not, however, be used for cultivated orchard crops, such as peaches, unless sod buffer strips are maintained between the rows of trees to check water runoff.

Edina silt loam (46)

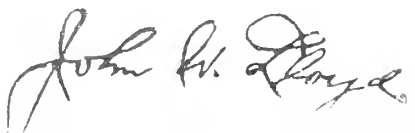
Edina silt loam is a dark-colored soil which occurs on nearly level land largely in the northeastern part of the county. It occupies a total area of 24,740 acres.

The surface soil is dark brown when moist but has a grayish cast when dry. It is about 8 inches thick, friable, and cultivates easily. The upper subsurface is darker colored and slightly heavier in texture than the surface. There is a thin brownish-gray silty layer at the base of this zone. The subsoil, beginning at 16 to 18 inches, is a brownish-yellow moderately compact and plastic clay. The subsoil becomes friable below 32 to 36 inches and is grayish yellow in color. Concretions of lime are present in the subsoil in some places and occasionally they are found on the surface.

Edina silt loam varies from slightly acid to medium acid in the surface and from sweet to slightly acid in the subsoil. The available phosphorus and potassium vary within the limits of low to medium. Organic matter is present in moderate amounts, but the nitrogen content of the cultivated soil is low.

Use and Management.—Corn and wheat in a rotation with clover have been the principal crops grown on Edina silt loam. During the first years of cultivation, yields were high but they are no longer satisfactory on untreated land. Red clover fails to make a good stand in all but the favorable years.

Treatment to keep up the productivity of this soil consists of regular additions



of organic matter, either by liberal applications of manure or by growing and plowing under legumes at least once in the rotation. If legumes are to be grown, the soil should be tested for acidity, as explained in Circular 346, and limestone applied as indicated by the test.

Edina silt loam should return satisfactory crop yields when properly treated. If it does not, then in all probability better drainage should be provided. Tile should be placed not more than 4 rods apart, and a good outlet must be obtained if the excess water is to be carried away promptly.

Results from the Lebanon experiment field, which is located on this soil type, are of interest. Here the untreated soil has given a long-time average of 21.7 bushels of wheat to the acre, 29.7 bushels of corn, and 33.7 bushels of oats. The limestone-manure treatment has brought these yields up to 30.2 bushels of wheat, 46.6 bushels of corn, and 45.5 bushels of oats. Neither phosphorus nor potash has given profitable response on this field. It is suggested, however, that there may be portions of this type which would respond to these two fertilizing materials and it is therefore recommended that both phosphorus and potash tests be made.

The producing capacity of this soil increases as the bluff bordering the Mississippi bottom is approached, and slick spots decrease in number in the same direction.

Shiloh silt loam (47)

Shiloh silt loam is a dark-colored soil that occurs on level and depressional upland areas in the northern half of St. Clair county. It occupies a total area of about 2,500 acres.

The surface soil is a heavy silt loam about 6 inches thick. It is black when moist but has a grayish cast when dry. It is inclined to be cloddy if worked when wet. The subsurface is slightly darker in color than the surface and is a silty clay loam. The subsoil, beginning at 15 to 20 inches, is a dark yellowish-gray slightly compact and medium-plastic clay loam. The subsoil becomes friable below 36 inches and is grayish-yellow in color. Below 50 inches calcareous loess is sometimes found.

Use and Management.—The first requirement of Shiloh silt loam is adequate drainage. Tile draw readily but good outlets are sometimes lacking. When drained, Shiloh silt loam has a high natural level of productivity. Treatment to keep up its productivity consists of regular additions of organic matter, either by liberal applications of manure or thru the growing and plowing under of legumes. The soil is slightly acid and usually requires applications of limestone. Phosphorus and potassium are not apt to give profitable responses on this soil unless a number of crops of sweet clover have been plowed under and no manure has been supplied. Tests should be made at intervals of several years to determine whether a need for phosphorus and potassium is developing.

Ebbert silt loam (48)

Ebbert silt loam is found in shallow depressions in the parts of the county where the loess blanket is thin. Its total area in St. Clair county is only 910 acres. This soil is naturally poorly drained, but drainage can be improved by open ditches or by tile placed not more than 4 rods apart.

The surface soil is a friable dark-gray silt loam varying from 7 to 10 inches in thickness. The subsurface is a yellow-spotted gray friable silt loam. The subsoil, beginning at 18 to 24 inches, is a medium-compact and plastic silty clay loam, gray in color and spotted with yellow. Below 38 to 40 inches the material becomes more friable and is of a pale-yellowish color.

Use and Management.—Ebbert silt loam can be made moderately productive by proper treatment. After drainage has been provided, the soil should be tested for acidity, and sufficient limestone added to permit the growth of sweet clover. If sufficient animal manure is available, no treatment other than lime and manure is recommended. If a grain system of farming is being followed, or if only small amounts of manure are available, the field should be tested for phosphorus and potassium and trial applications made if the tests reveal deficiencies.

This type frequently contains small "scalds" or slick spots. The management of these spots is discussed on pages 24 and 25.

Beaucoup clay loam, first bottom (70)

Beaucoup clay loam, first bottom, is found in the lower parts of the flood plains of Mississippi and Kaskaskia rivers, and Doza creek. It has been formed from sediment deposited from standing water and many of the areas of this type have remained poorly drained and swampy, even tho open ditches have been provided. This type has a total area in St. Clair county of 22,000 acres.

The surface soil is a sticky, tough, brown to grayish-brown clay or clay loam 4 to 8 inches thick. There is no true subsurface and subsoil development, but the color becomes lighter with depth. The heavy plastic clay continues to depths of over 3 feet.

Use and Management.—The chief problem in the management of Beaucoup clay loam, first bottom, is to obtain adequate drainage. In the Kaskaskia river bottom and in the American bottoms where the present system of ditches has failed to provide adequate outlets, the best use of the land is probably for timber or meadow.

If adequate drainage can be provided, the organic matter and nitrogen contents should be maintained by plowing down either animal manure or green manure such as sweet clover. This latter crop will usually grow on Beaucoup clay loam without lime. No other treatment is suggested for this soil until deficiencies, which are not now apparent, become evident.

Sharon loam, first bottom (72)

Sharon loam, first bottom, is found thruout the county in the bottomlands of small streams. It is subject to frequent overflow following heavy rains, and almost every overflow brings a deposit of new material. The soil is therefore young and has little or no profile development. It is a mixture of sand, silt, and clay. About 22,800 acres of this type have been mapped in St. Clair county.

Use and Management.—In view of the frequent overflow, no treatment is suggested for Sharon loam, first bottom, since new material is constantly being

brought in and deposited. This addition of new soil material serves to keep up the productive level. Unless the land can be protected from overflow, corn, soybeans, and other short-season summer crops should be grown.

Drury fine sandy loam, bottom (75)

Drury fine sandy loam, bottom, occurs at the base of the bluff in the American bottoms and in the adjacent small narrow creek bottoms. It occupies about 11,700 acres in St. Clair county. Parts of this type are subject to frequent overflow following heavy rains, but the water drains away quickly. The material from which Drury fine sandy loam is derived is recent sediment washed in from surrounding uplands, most of it having been deposited since the uplands were cleared and farmed. It consists, for the most part, of a brownish-yellow to yellowish-gray very fine sand varying from 12 to 60 or more inches in thickness. It has not as yet developed a true subsurface or subsoil.

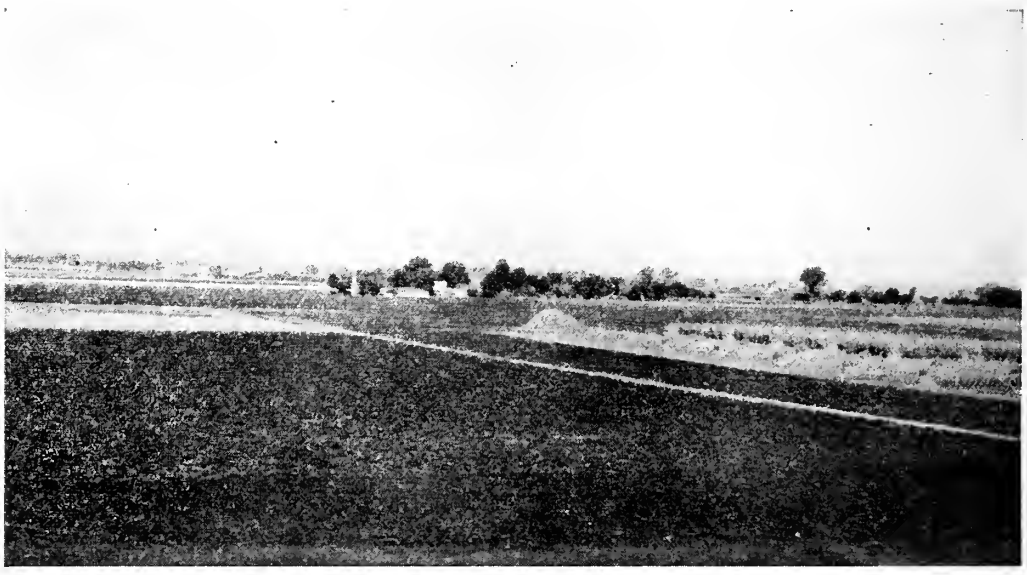


FIG. 7.—LOOKING WEST ACROSS THE AMERICAN BOTTOMS

Drury fine sandy loam, in the foreground, is an excellent truck soil when protected from overflow. (The hazy sky in the background is due to St. Louis smoke.)

Use and Management.—Drury fine sandy loam, bottom, is an excellent truck soil when protected from overflow and because of its location near a large urban district it may well be used for this purpose. Altho this soil is naturally productive its use is often limited, because of frequent overflow, to short-season crops such as corn and soybeans. The frequent overflows are in some ways beneficial because they deposit sediment, thus continually renewing the soil material. It is for this reason that no soil treatment is suggested. Areas protected from overflow should be tested for their lime requirement, and manure or legume crops plowed under to furnish nitrogen and organic matter.

Okaw silt loam, terrace (84)

Okaw silt loam, terrace, occurs on low terraces along Kaskaskia river and its tributaries and has a total area of about 8,000 acres in St. Clair county. It is subject to occasional overflow, some portions less frequently than others, depending on the level on which it occurs. This soil was formed by the deposition of a thin silty layer on a thick layer of heavy clay.

The surface soil is a pale yellowish-gray silt loam 3 to 4 inches thick. The subsurface is a gray ashy silt varying from 3 to 12 inches in thickness. The subsoil, beginning at a depth of 6 to 15 inches, is a very slowly pervious, heavy, plastic, pale yellowish-gray clay 10 feet or more thick.

Use and Management.—The productivity of Okaw silt loam, terrace, under general farming is very low because of the impossibility of securing adequate drainage by the use of either tile or open ditches, the unfavorable physical condition which restricts root penetration, and because of the low content of plant nutrients. It is doubtful whether cultivation should be attempted, as the chances for success are not encouraging. If a crop is to be grown, summer crops, such as corn and soybeans, should be avoided. If fertilizers are used they should be applied on a trial basis and only the immediately available kinds used. Because of its tight subsoil, Okaw silt loam does not produce a rapid growth of timber, and it seems probable that its best use is for meadow or pasture.

Keyesport silt loam (86)

Keyesport silt loam is a minor type in St. Clair county, occupying only about 1,500 acres. It is found around the bases of some of the higher hills in the upland and is composed of the recently deposited material washed down from the adjacent hills since they have been in cultivation. It is subject to short periods of overflow by the runoff from the adjacent higher land, but the water usually drains away rapidly.

The surface soil is a yellowish-gray to yellow silt loam which varies from one to several feet in thickness. Below this layer is the buried soil which formed the surface prior to the deposit of the sediment eroded from the nearby hillsides.

Use and Management.—Keyesport silt loam is in general moderately productive without special treatment, but because it is so variable, specific recommendations for management cannot well be given. It is suggested that each area be tested for acidity, phosphorus, and potash, and that the management be based on the results of these tests.

River sand, bottom (92)

River sand, bottom, is mapped adjacent to the bank of Mississippi river and occupies a total of 1,080 acres. It is made up of rather clean sand, varying from fine to coarse, that has been recently deposited, and the type is subject to overflow whenever the channel becomes filled.

Use and Management.—The best use of this land is probably for the production of timber; cropping is very uncertain. For suggestions for the planting of river sand to timber, write the Agricultural Experiment Station, Urbana.

Limestone outcrop (94)

Limestone outcrops are for the most part nearly vertical cliffs of exposed rock. They are nonagricultural altho they often have a sparse timber covering consisting largely of cedar.

Bonnie silt loam, bottom (108)

Bonnie silt loam, bottom, occurs as bottomland along Kaskaskia river and its larger tributaries. It occupies about 25,700 acres in St. Clair county. The material which forms this soil is largely silt brought down from upstream and surrounding uplands. The bottomlands are nearly level, poorly drained, and often swampy. This soil has but little horizon development because it is subject to frequent overflow and is continually receiving new deposits.

The surface soil is a friable gray silt loam varying from 6 to 12 inches in thickness. Below the surface the material is lighter in color, but no subsoil proper has developed.

Use and Management.—Frequent overflows limit the use of Bonnie silt loam, bottom, to summer crops and pasture. This soil is naturally poorly drained but parts can be artificially drained by ditching if care is observed to obtain proper fall. The major part of the area of this type has not been cleared and, because of poor drainage and frequent inundations due to stream overflow, it might properly remain in timber. If overflow is not too frequent and drainage can be well established, so that cropping is justified, lime should be applied as explained in Circular 346. Following the application of lime, sweet clover or some other legume can be grown and plowed under to increase the organic-matter content. A trial of some of the readily available mineral fertilizers, either separately or as a commercial mixture applied to corn at planting time, might be made.

Corn is the principal crop grown on this land because it often dries early enough in summer so that the crop can be planted and seldom overflows until after the corn can be harvested in the fall. Soybeans might also be grown. Most of the land is not cropped, however, but is either used as pasture or allowed to remain idle.

Racoon silt loam, terrace (109)

Racoon silt loam, terrace, is found closely associated with Bonnie silt loam, bottom, along Kaskaskia river and its larger tributaries. This soil is differentiated from Bonnie silt loam, bottom, by having a fairly well-developed subsoil and also by occurring on slightly higher land. Altho this land is subject to overflow in the summer, the water seldom covers it for any long period. Drainage is slow on account of the compact subsoil. This soil type covers altogether about 1,250 acres.

The surface soil is a friable dark-gray silt loam varying from 7 to 10 inches in thickness. The subsurface is light-gray in color with a tendency to be ashy in the lower part. The subsoil begins at 22 to 28 inches and is a pale yellowish-gray compact and plastic clay loam. The subsoil has not developed to a uniform thickness in the type as a whole. It varies from a few inches to as much as 18 inches in thickness. The material becomes light-gray and friable below the subsoil, except in the lower-lying areas, where it is a heavy, plastic clay loam.

Use and Management.—The success to be obtained in the cultivation of Racoon silt loam, terrace, is dependent largely on maintaining proper drainage. A thoro system of open surface ditching leading into a well-established outlet will remove the excess water in most seasons early enough for spring planting. Where adequate drainage is provided, the recommendations made for increasing the organic-matter and nitrogen contents of Bonnie silt loam, bottom, page 22, apply also to this type.

Venedy silt loam, terrace (110)

Venedy silt loam, terrace, is a productive dark-colored terrace soil, occupying about 1,150 acres in St. Clair county adjacent to Kaskaskia river. This type is subject to overflow during flood times, as it lies but slightly higher than the adjacent bottom, but fortunately the water does not stand on the soil for long periods. Natural drainage is slow because of the lack of an outlet for the water, but the soil can be satisfactorily drained if an outlet is established.

The surface soil is a friable grayish-brown silt loam 7 to 9 inches thick. It has a grayish cast when dry. The subsurface is dark yellowish-gray in color and slightly heavier in texture than the surface. In a few places the lower subsurface is grayish-yellow and silty in texture. The subsoil, beginning at 15 to 20 inches, is a dark grayish-yellow slightly compact and medium-plastic clay loam. Concretions of calcium carbonate are frequently found in the subsoil.

Use and Management.—Where adequate drainage has been provided, either by open surface ditches or by tile, Venedy silt loam, terrace, returns moderately good crop yields without soil treatment. It will be found to vary in acidity from slight to medium and will not need as much limestone to grow clovers as do most soils in this county. The growing and turning under of legume crops, or the frequent addition of animal manure, will increase the organic-matter and nitrogen contents of the soil. Tests should be made for phosphorus and potassium to determine the need for these elements.

Ora silt loam (111)

Ora silt loam is found on the level or slightly depressional upland prairie areas southeast of Mascoutah. It occupies a total area of about 2,500 acres.

The surface soil is a friable brownish-gray silt loam. The subsurface is light brownish-gray in color and the lower part is ashy. The subsoil, beginning at 24 to 30 inches, is a compact and plastic clay of a gray color mottled with pale yellow.

Use and Management.—Adequate drainage must be provided on Ora silt loam, by the use either of open surface ditches or tile. If tile are used, they must be placed close together and shallow. Often a good outlet for tile cannot be obtained, in which case open surface ditching is the only means of draining the land. The soil is low in organic matter and nitrogen, and fresh organic material should be added regularly in the form of animal manure or green-manuring crops. The soil is acid and low in available phosphorus. It should be tested, and limestone and phosphate applied as the tests indicate. If a grain system of farming is being followed, a serious potassium deficiency may be expected to develop after a number of crops of sweet clover have been plowed down.

Potassium tests should be made at intervals of four or five years in order to anticipate potash deficiency. If heavy manure applications are made, there need be no immediate concern about potassium.

Putnam silt loam (112)

Putnam silt loam occupies the nearly level slowly drained prairie upland in the southern part of the county. It covers a total area of about 19,200 acres. It is characterized by an impervious subsoil which makes underdrainage very slow and by the presence of numerous "scalds" or slick spots described below.

The surface soil of Putnam silt loam is a friable grayish-brown silt loam 6 to 7 inches thick. The upper subsurface is brownish-gray and the lower is gray and sometimes ashy. Hard rounded black pellets of iron and manganese are present thruout both the surface and subsurface. The subsoil, which begins at 17 to 21 inches, is a very compact and plastic clay of a grayish-yellow color splotched with reddish-brown. Below 34 to 38 inches the material is less compact and is of a pale yellowish color.

Use and Management.—The first need of Putnam silt loam is drainage. Tile will not draw in this soil, but the water can usually be carried off by the use of open ditches and furrows.

Putnam silt loam is acid and requires limestone to produce satisfactory yields of most crops. If, in addition to limestone, heavy applications of animal manure can be made, no further treatment is likely to prove advisable. If the amount of manure available is small, sweet clover can be plowed under to furnish nitrogen, and phosphate and potash can be applied as needed, by drilling or broadcasting on wheat.

The type of crops to be grown on Putnam silt loam should be largely determined by the number of slick spots present. Where they are abundant, corn and soybeans should be held to a minimum in the rotation, and such crops as wheat, winter barley, lespedeza, and sweet clover should be grown. Where the slick spots are infrequent, corn can be made to produce fair yields in the rotation, but it must be remembered that Putnam silt loam is primarily a wheat soil.

Slick spots

Slick spots, commonly known as scalds or alkali spots can be recognized by their lighter colored surface soil, the shallowness of the claypan subsoil, sometimes called "hard pan," and the relatively poor plant growth or absence of growth. They are very common in Putnam silt loam but are not confined to that type. The surface soil is a light brownish-gray to gray silt loam 2 to 6 inches thick. The subsurface is a light-gray ashy silt. The subsoil, which begins at 6 to 15 inches, is a pale yellowish-gray clay loam, very tough when dry but rather friable when wet. Rounded gray pellets of calcium carbonate (lime) are present in places in the subsoil. The subsoil of the slick spots is extremely resistant to water penetration. If this soil is worked when dry, the hardness of the subsoil tends to throw the plow out of the ground, particularly if there has been any erosion of the surface or if the plow is set as deep as 6 inches.

The surface soil of slick spots is acid, but in correcting this condition only a

minimum amount of lime should be used, for the lower strata have a highly alkaline reaction.

Use and Management.—Slick spots will produce fair yields of small grains in most years if given proper treatment, but in those spots where the surface is shallow, extending perhaps to a depth of only 6 to 10 or 12 inches, summer crops, such as corn and soybeans, rarely produce any grain at all. When the subsoil is deeper than 10 or 12 inches, fair yields of corn can be produced in favorable years if sweet clover or manure has been plowed under. Crops growing on these spots are, however, very sensitive to either an excess or a deficiency of moisture.

Cox silt loam (113)[1]

Cox silt loam, now known as Oconee silt loam, is mapped on the gently sloping prairie land bordering the stream courses in the southern part of St. Clair county. It covers a total area of 21,640 acres. The surface drainage is moderately rapid but underdrainage is slow. Sheet erosion is serious on some of this land.

The surface soil is a friable brownish-gray silt loam 5 to 7 inches thick. The subsurface is yellowish-gray; the lower part is ashy and splotched with orange or dull red. The subsoil is a compact and plastic brownish-yellow clay often splotched with dull red. Below 30 to 32 inches the material becomes more friable. Slick spots occur in association with this soil and in some areas materially lower its agricultural value. For a discussion of these spots, see Putnam silt loam, Type 112, described above.

Use and Management.—On Cox silt loam, drainage should be provided by means of a system of surface ditching that will remove the excess surface water with as little erosion as possible. Where the slope is gentle, the furrows may run down the slope. Where the slope is steep enough to erode, the furrows should be plowed across the slope in such a manner as to provide sufficient slope to carry the water and still not cause erosion. Soil-treatment problems of this soil type are about the same as those of Putnam silt loam (112), page 24. It is more difficult to manage because of its tendency to erode. This is particularly true of the slick spots, which erode badly even on very slight slopes.

Contour farming, together with good soil treatment and cropping practices, will take care of the erosion problem on most areas of this type. In some places the diversion ditch type of terrace may be effective. This soil is not suitable for any other type of terracing, and fortunately effective erosion control is possible without resorting to it.

Wade silt loam (121)[1]

Wade silt loam is found on the level or slightly depressional upland areas which were formerly covered by hardwood forest. It occupies an area of about

[1]Subsequent to the preparation of St. Clair county soil map, the name Cox silt loam was changed to Oconee silt loam, and the name Wade silt loam was changed to Bellmont silt loam. Future references to these types will be found under the latter name.

1,800 acres in St. Clair county south and east of Mascoutah. This type is similar to Ora silt loam, Type 111, but has a lighter colored surface.

The surface soil is a friable light brownish-gray silt loam 4 to 6 inches thick. The subsurface is a friable silt loam that is light-gray and ashy in its lower part. The subsoil, beginning at a depth of 22 to 26 inches, is a pale yellowish-gray compact and plastic clay. It becomes somewhat less plastic below 40 inches.

Use and Management.—The recommendations made for Ora silt loam, Type 111, apply also to this soil.

Eroded clay loam (122)[1]

Eroded clay loam, now known as Okaw silt loam, terrace, eroded phase, occurs for the most part on the steep slopes of the terraces along Kaskaskia river and its tributaries. The soil material is the same heavy, plastic, water-deposited clay which is found under Okaw silt loam, Type 84. Erosion has removed the silty covering to a very large extent, leaving the underlying plastic material. This soil occupies a total of about 2,700 acres in St. Clair county.

The surface, which may or may not be present, is a yellowish or reddish-yellow silt loam not over 6 inches thick. The upper subsoil, which is frequently exposed, is a reddish to yellowish plastic clay, and the lower subsoil is a plastic gray clay.

Use and Management.—Because it occurs as long narrow strips, Eroded clay loam is commonly farmed in connection with adjacent types, altho it seldom produces satisfactory yields and cannot be farmed without eroding. Where possible, this type should be kept in grass or timber, without much choice as to which use is made of it. The low productivity of this soil probably would not warrant any investment for fertilizers.

Harrison silt loam (127)

Harrison silt loam is a dark-colored soil found on gently sloping prairie land in the northern half of St. Clair county, occupying about 30,300 acres.

The surface soil is a brown friable silt loam 7 to 9 inches thick and has a grayish cast when dry. The subsurface is yellowish-brown with a distinctly gray cast, the lower 2 or 3 inches sometimes being quite gray. The subsoil begins at about 18 inches and is a moderately compact and slightly plastic brownish-yellow clay loam. The lower subsoil, below 30 inches, becomes friable. Small slick spots are sometimes seen in association with this type in the eastern part of St. Clair county. For a discussion of these spots, see page 24.

Use and Management.—Harrison silt loam is one of the most productive soils in St. Clair county. Drainage, if inadequate, can be established by tiling, but laterals will sometimes need to be close, as tile draw somewhat slowly in this soil type. When drainage is established, attention should be given to providing a continuous supply of fresh organic matter. The soil should be tested and lime-

[1]Subsequent to the preparation of the St. Clair county soil map, the name Eroded clay loam was changed to Okaw silt loam, terrace, eroded phase. Future references to this type will be found under the latter name.

stone applied as needed in order to grow legumes. If manure is not available, the soil should be tested for phosphorus and potassium and applications made as needed. However, under a grain system of farming, where sweet clover is used at frequent intervals, a potash deficiency need not be expected until a number of crops of clover have been turned under. If liberal quantities of animal manure are plowed under, phosphate and potash probably will not bring about much response except on such crops as wheat and alfalfa.

Other conditions being equal, the productivity of this soil type may be expected to increase as the distance from the bluffs decreases.

Douglas silt loam (128)

Douglas silt loam occurs on the rolling well-drained prairie areas in the northern half of St. Clair county, and occupies a total of about 11,300 acres.

The surface is a light-brown silt loam and in virgin soil is 4 to 6 inches thick. On many cultivated areas it is very thin or entirely absent. The subsurface is friable and brownish yellow in color. The subsoil, which begins at 9 to 13 inches, is a brownish or reddish-yellow slightly compacted silty clay loam. Below 21 to 24 inches the material becomes friable and silty and is bright yellow in color. The inherent productivity of this type increases with proximity to the bluffs.

Use and Management.—Practically the same treatment is recommended for Douglas silt loam as for Ava silt loam, Type 14, page 17. However, higher yields may be expected under good management than on Ava silt loam under the same management. This soil, like Ava silt loam, is well adapted to vegetable, small-fruit, and orchard crops.

Newart silt loam, bottom (161)

Newart silt loam, bottom, occurs in the Mississippi bottom on low undulating ridges. This soil occupies a total area of 4,200 acres in St. Clair county. The material from which it was formed was deposited from moving flood waters on top of sand which had been previously deposited by Mississippi river.

The surface soil is a friable grayish-brown to brown silt loam 6 to 8 inches thick. The subsurface is a brown slightly plastic silty clay loam which rests upon a yellow open sandy loam. Below 25 to 30 inches there is nearly pure sand, but the soil above has sufficient moisture-holding capacity to satisfy the needs of crops most years.

Use and Management.—Newart silt loam, bottom, is a desirable soil for general farming and for certain types of trucking. It is easily cultivated, naturally well drained, and contains an abundance of plant-food elements. It is near neutral in reaction and will usually grow sweet clover or alfalfa without lime. Care should be observed to see that the organic-matter and nitrogen contents are maintained by plowing under legumes or manure. This soil should produce good grain crops, except in very dry years, without any treatment other than that suggested. For information on special problems with truck crops, write the Agricultural Experiment Station, Urbana, Illinois.

Gorham clay loam, bottom (162)

Gorham clay loam, bottom, is found in the southern part of the American bottoms on gently rolling topography. It has a total area of about 1,300 acres.

The material from which it was formed is a heavy clay loam or clay deposited by backwater on top of sand ridges which had been previously deposited by Mississippi river.

The surface soil is a plastic brown clay or clay loam. The color becomes somewhat lighter with depth but the texture is unchanged. At a depth of 26 to 40 inches there is an abrupt change to nearly pure fine sand.

Use and Management.—Gorham clay loam, bottom, has moderate surface drainage but because of its heavy texture, the movement of water thru the soil is very slow. Consequently it is often difficult to prepare a satisfactory seedbed. The soil is sweet, and probably the best treatment is to plow down sweet clover at regular intervals; this will help maintain the content of organic matter and will aid in the preparation of good seedbeds. Except in extremely wet or dry years, this soil will produce satisfactory yields of corn and small grains.

Bluford silt loam, immature phase (164)[1]

Bluford silt loam, immature phase, is the second most extensive type in St. Clair county, occupying 50,090 acres or 11.6 percent of the total area of the county. It has developed on gently rolling upland, from loess more than 60 to 70 inches thick. It differs from Bluford silt loam, Type 13, in having a somewhat darker surface and a more permeable subsoil. Near the Mississippi river bluffs this type is found on gentler slopes than in the eastern part of the county, and erosion is consequently less active. In general, the permeability of the subsoil and the productivity of this soil increase as the distance from the Mississippi bluffs decreases.

Use and Management.—The principal problems connected with the management of Bluford silt loam, immature phase, are the maintenance of productivity and the prevention of erosion. This soil is acid and low in organic matter. If, however, limestone is applied and animal manure or catch crops of sweet clover can be plowed under at frequent intervals, satisfactory yields can be expected. Under a grain system of farming, where probably little or no manure is available, tests should be made for phosphorus and potassium, and applications made as needed. Ordinarily under a livestock system of farming neither phosphate nor potash cause sufficient increase in yield to justify their use, altho even when manure is available, phosphates may be used to advantage for wheat and alfalfa.

The problem of erosion control on the gentler slopes of this soil (slopes of less than 2 percent) can be largely solved by the use of good rotations, including

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[1]Subsequent to the preparation of the St. Clair county soil map, the name Bluford silt loam, immature phase, was changed to Bogota silt loam, (117). Future references to this type will be found under the latter name.

deep-rooted legumes. However, in the eastern part of the county, where the slope frequently exceeds 2 percent, contour farming may be necessary in addition to the treatment suggested above if erosion is to be controlled. In some places grass waterways and diversion terraces may also be needed.

Wynoose silt loam, immature phase (165)[1]

Wynoose silt loam, immature phase, differs from the type Wynoose silt loam, Type 12, in having a somewhat darker surface and a less impermeable subsoil. It occupies level or nearly level land in association with the immature phase of Bluford silt loam, Type 164. Wynoose silt loam, immature phase, covers a total of 11,390 acres in St. Clair county.

Use and Management.—The suggestions made for the handling of Wynoose silt loam, Type 12, will apply also to this soil, but somewhat better yields may be expected, because this soil can usually be more adequately drained and it is both chemically and physically superior to Type 12.

Flora silt loam, terrace (168)

Flora silt loam, terrace, is found in the high and nearly level terraces of Kaskaskia river, which are now or were formerly covered with a mixed deciduous hardwood forest. It occupies a total area in St. Clair county of only 770 acres.

The surface soil is a thin brownish yellow-gray friable silt loam. The upper subsurface is pale yellowish gray and the lower subsurface is light gray and ashy. The subsoil, beginning at 18 to 20 inches, is a pale-yellow compact and plastic clay which seriously interferes with moisture movements. It becomes more friable below 35 to 40 inches and is brighter yellow in color.

Use and Management.—The suggestions made for the handling of Wynoose silt loam, Type 12, apply also to this soil. It will return moderate crop yields under good management.

Freeburg silt loam, terrace (169)

Freeburg silt loam, terrace, is found on the gently rolling slopes of the high terraces of Kaskaskia river. It occupies a total area of about 1,800 acres in St. Clair county.

The surface soil, which is from 6 to 8 inches thick, is a light brownish yellow-gray silt loam containing appreciable amounts of very fine sand. The subsurface is a light yellowish-gray friable silt loam. The upper subsoil, which begins at a depth of 16 to 18 inches, is a yellow-gray medium-compact and somewhat plastic clay loam, which is slowly pervious to water movement. The lower subsoil, below 28 to 30 inches, is more friable and more yellow. Below 50 to 60 inches there are stratified sands, gravels, and clays.

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[1]Subsequent to the preparation of the St. Clair county soil map, the name Wynoose silt loam, immature phase, was changed to Whitson silt loam (116). Future references to this type will be found under the latter name.

Use and Management.—The suggestions made for the handling of Bluford silt loam, Type 13, apply also to this soil. It will return fair crop yields under good management.

Breese silt loam (170)

Breese silt loam occurs on the nearly level upland covered by deep loess on which a forest vegetation became established only a short time before the county was settled. Consequently the surface soil has the characteristics of a forest soil, while the upper subsurface and the subsoil resemble the horizons in a prairie soil. Surface drainage is slow and underdrainage is moderately slow. This type covers a total of 7,060 acres in St. Clair county.

The surface soil is about 6 inches thick and is a friable brownish-gray to yellowish-gray silt loam. The upper subsurface is frequently darker than the surface, being a grayish brown. The lower subsurface shows the greatest effects of timbering, being yellowish gray and sometimes somewhat ashy. The subsoil, which begins at a depth of 18 to 20 inches, is a medium-compact and plastic brownish-yellow clay loam resembling the subsoil of Edina silt loam, Type 46.

Use and Management.—Breese silt loam is acid and somewhat low in organic matter. Its first requirement is drainage. Excess water can be best carried away by furrows and open ditches.

When adequate drainage has been established, the soil should be tested for acidity (see pages 11-12) and limestone applications made as needed. Thereafter regular applications of manure should be made, or sweet clover should be grown and plowed under at frequent intervals in order to build up the supply of organic matter and nitrogen. Tests should be made for phosphorus and potassium, and applications of these materials made when needed (see page 12).

Breese silt loam is a moderately productive soil. The Mascoutah experiment field, now abandoned, was located on this type. The twelve-year average yield (1902-13) of corn was 36 bushels and of wheat 15 bushels, on untreated soil. Applications of limestone and manure increased these yields to 49 bushels of corn and 19 bushels of wheat over the same period. Approximately the same results can be expected from the use of sweet clover and phosphate where adequate drainage is provided.

Unity sandy loam, terrace (175)

Unity sandy loam, terrace, is mapped on the low sandy ridges in the Kaskaskia bottom. It has a total area in St. Clair county of 1,260 acres. It is subject to occasional overflow in times of high water, but it is practically all farmed.

The surface soil is a yellow to reddish-yellow sandy loam 4 to 6 inches thick. The subsurface is slightly lighter in color than the surface. The subsoil begins at about 20 inches and is a yellowish-gray sandy loam with a reddish cast, containing variable amounts of clay. The clay never interferes seriously with drainage, but in spots the lack of clay so reduces the water-holding capacity as to make the soil drouthy. Below 30 inches the subsoil is a bright-yellow sand.

In a few spots the surface is nearly flat and the soil is a yellowish gray instead of yellow, indicating poor drainage.

Use and Management.—When Unity silt loam, terrace, does not overflow too frequently, limestone should be applied as needed (see pages 11-12) and either manure or sweet clover turned under. Phosphorus may be expected to return substantial increases of wheat and alfalfa, but tests should be made in advance of applications. This soil is well adapted to alfalfa and wheat when it does not overflow, but it is apt to be drouthy for corn in dry years.

Orio silt loam, terrace (177)

Orio silt loam, terrace, is a dark-colored soil found on the high terraces of Kaskaskia river. It occupies an area of only about 100 acres in St. Clair county. It resembles Edina silt loam, Type 46, very closely.

Use and Management.—The suggestions made for the management of Edina silt loam, Type 46, will apply also to Orio silt loam, terrace.

Lentz silt loam, terrace (179)

Lentz silt loam, terrace, is a medium-dark soil found on the higher terraces of Kaskaskia river. It resembles Putnam silt loam, Type 112, very closely except that it is underlain below 60 inches by stratified sands, gravels, and clays. It covers a total of 670 acres in St. Clair county.

Use and Management.—The suggestions made for the use and management of Putnam silt loam, Type 112, apply equally well to Lentz silt loam, terrace.

Dupo silt loam, bottom (180)

Dupo silt loam, bottom, occurs in the nearly level parts of the high bottom of Mississippi river. It occupies 2,870 acres in St. Clair county. The material from which the surface was formed was deposited by running water on top of a bed of clay which had been deposited earlier by backwater.

The surface soil is a friable brown silt loam 6 to 8 inches thick. The subsurface is a grayish-brown silt loam. The subsoil, which begins at about 18 inches, is a brownish yellow-gray slightly compact and plastic clay loam.

Use and Management.—Dupo silt loam, bottom, can be drained effectively by open ditches or by tile. After drainage is established, the soil needs little but frequent applications of animal or green manure since it is sweet and is well supplied with phosphorus and potash. If animal manures are not applied to this soil, and sweet clover is grown and plowed under regularly, tests should be made at intervals for phosphorus and potassium so that applications can be made befor the shortage of one or both of these elements becomes serious.

When this soil is not protected from overflow, its stock of plant nutrients is renewed; but after protection is established, this source of supply is cut off.

Riley fine sandy loam, bottom (181)

Riley fine sandy loam, bottom, is found on gently rolling ridges in the American bottoms, where it covers a total area of about 10,900 acres. The soil material was deposited by the rapidly moving flood waters of Mississippi river.

This soil type is naturally well drained and is either sweet or only slightly

acid. Its open, porous texture and low water-holding capacity make it somewhat drouthy for late summer crops such as corn.

The surface is a light-brown loose fine sandy loam 8 to 12 inches thick. The subsurface is light brown to yellowish gray. No true subsoil has developed in this type, altho in places thin bands of sandy clay are found at a depth of 18 to 24 inches. Normally, below about 20 inches there is a thick bed of grayish-yellow to yellow fine sand.

Use and Management.—Riley fine sandy loam, bottom, when protected from overflow and farmed, becomes acid, as do all soils in this region. If alfalfa or sweet clover is to be grown, the soil should first be tested for acidity and phosphorus and applications of limestone and phosphates made as needed. Sweet clover or manure plowed under at frequent intervals should maintain the producing capacity of this soil for some time without other treatment.

This soil is well adapted to trucking, as it warms up early in the spring and is easy to work. Moreover its location near St. Louis is favorable for its use in growing vegetables. If special problems arise regarding truck growing on this soil, the Agricultural Experiment Station, Urbana, Illinois, will be glad to furnish any information available.

Ava silt loam, immature phase (214)[1]

Ava silt loam, immature phase, is the most extensive soil type in St. Clair county, occupying 53,930 acres, or 12.64 percent of the total area of the county. It is found in regions of thick loess in the gently rolling to rolling upland that is now or was formerly timbered. Surface drainage is rapid and underdrainage is good, but the soil is not drouthy.

The surface soil, which is 6 to 7 inches thick, is a brownish-yellow friable silt loam. Near the bluff, where the loess is coarse, the texture is that of a fine sandy silt loam. The subsurface is a friable yellow silt loam. The subsoil, which begins at 12 to 14 inches, is a slightly compacted and slightly plastic reddish-yellow silty clay loam.

Use and Management. Because of rapid runoff this soil is subject to erosion when cultivated. Erosion can be controlled, however, by the measures suggested for Ava silt loam, Type 14. Because of the greater permeability of this soil, erosion control by mechanical means, such as terraces, is more effective than on Ava silt loam. Good alfalfa can be raised on this type.

This soil is acid, except for those portions that occur immediately next to the bluff, and limestone should be applied as needed. The use of manure or sweet clover as a green-manure crop will keep this soil in good producing condition for several rotations.

Because it is well drained and has a favorable location with respect to markets, this soil may be used to advantage in the production of a variety of vegetables and fruits.

[1]Subsequent to the preparation of the St. Clair county soil map the name Ava silt loam, immature phase, was changed to Alma silt loam (118). Future references to this type will be found under the latter name.

Fig. 8.—A Thrifty Growth of Alfalfa on Ava Silt Loam, Immature Phase
With proper soil treatment a very satisfactory growth of alfalfa is obtained on this type. The field shown above is ready for the third cutting of the season.

In general, the productivity of this type may be expected to increase as the distance from the bluff decreases.

Eroded silt loam in youthful and immature areas (216)[1]

Eroded silt loam in youthful and immature areas is a type which occupies the steep slopes in the areas of thick loess. It is subject to severe erosion when cultivated. Because of its slope there is little or no soil development, erosion having removed the surface almost as rapidly as the soil has formed. This type covers a total area of about 41,000 acres in St. Clair county.

The surface is a yellow silt to very fine sandy loam. Back from the Mississippi bluff for a distance of half a mile to a mile, the surface is often covered with lime concretions and is sweet. Farther back it is moderately to strongly acid. Where a subsoil has formed, it is a slightly plastic reddish-yellow heavy silt loam or silty clay loam. This subsoil has usually become exposed as a result of the erosion which has taken place since the land was cleared.

Use and Management.—Where the surface of Eroded silt loam in youthful and immature areas is calcareous, erosion probably does little immediate damage unless gullies form. It can therefore be cultivated and will often produce excellent fruit or vegetables. Nitrogen is the only element lacking in the soil under such conditions.

Where the surface is acid, it is an indication that the soil has been leached.

[1]Subsequent to the preparation of the St. Clair county soil map the name of this type was changed to Stookey silt loam. Future references will be found under the latter name.

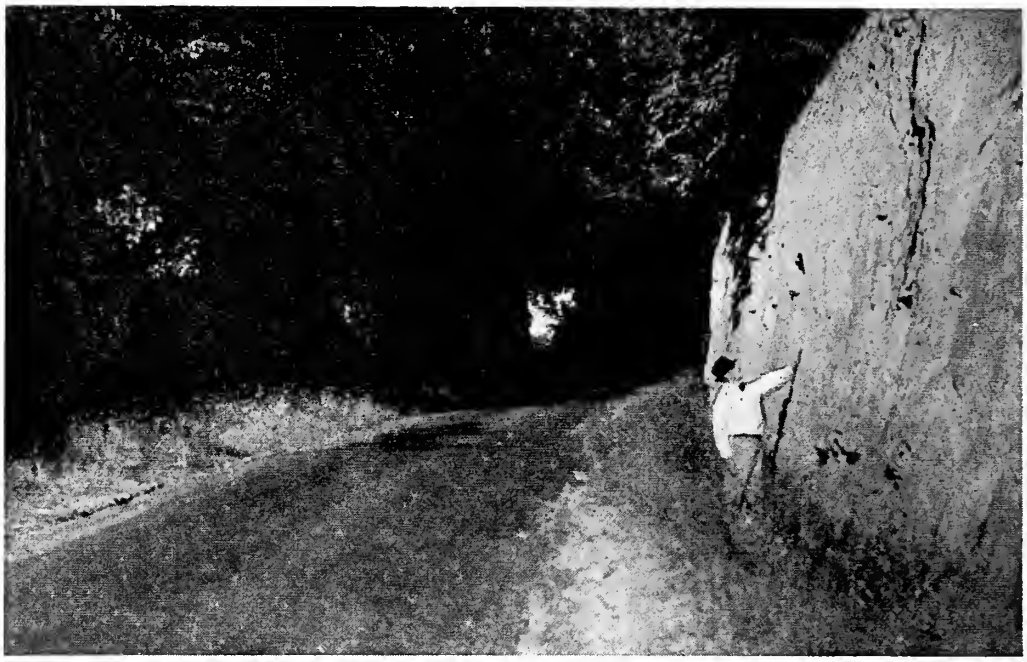

FIG. 9.—A DEPOSIT OF DEEP LOESS EXPOSED BY THE BUILDING OF A ROAD

The depth of some of the loess deposits in the area bordering the Mississippi bottom is indicated here. The bank at the left of the road is equally high but is somewhat obscured by the deep shade.

Under this condition erosion is harmful, and the soil probably should not be cultivated. Where the slope is not too steep, this soil can be used for permanent pasture or fruit; but where the slope is much over 15 to 20 percent, it should probably be kept in timber. Information about reforestation may be obtained by writing to the Agricultural Experiment Station, Urbana, Illinois.

SUMMARY OF CHARACTERISTICS OF ST. CLAIR COUNTY SOILS

The agriculturally more important characteristics and properties of the soil types occurring in St. Clair county are summarized in Table 2. Topography, drainage, reaction with respect to acidity, the contents of organic matter and of available phosphorus, all are indicated, together with an index of the inherent productivity of each type whether used for field crops, for pasture, or for forest.

A large majority of the soil types in this county it will be noted are acid, therefore in need of limestone. Many of them are also low in phosphorus as well as in organic matter.

The information in this table should not be taken to mean that every farm or field of a given soil type will necessarily exhibit the same characteristics as indicated here. As already pointed out, acidity and productivity may vary markedly within areas of the same type. For that reason, where there is doubt, each field should be tested as recommended in the more detailed discussion of the type, and treatments should be based on such test or tests.

TABLE 2.—ST. CLAIR COUNTY SOILS: CHARACTERISTICS, PROPERTIES, AND ADAPTATION

Type No.	Type name	See page[1]	Topography[2]	Drainage[3]		Reaction	Available phosphorus	Organic matter	Response to treatment	Productivity indexes[4]		
				Surface	Under					Field crops	Pasture	Forest
2	Cisne silt loam	13	Undulating	Slow	Very slow	Acid	Low	Low	Fair	9	C	C
3	Hoyleton silt loam	14	Gently rolling	Moderate	Very slow	Acid	Low	Low	Good	8	B	B
5	Eroded silt loam	14	Steep	Rapid	Rapid	Acid	Low	Low	Poor	10	C	B
12	Wynoose silt loam	14	Undulating	Slow	Very slow	Acid	Low	Low	Fair	9	C	C
13	Bluford silt loam	15	Gently rolling	Moderate	Slow	Acid	Low	Low	Good	8	B	B
14	Ava silt loam	17	Rolling	Rapid	Moderate	Acid	Low	Low	Good	8	B	A
46	Edina silt loam	17	Nearly level	Very slow	Slow	Acid	Medium low	Medium	Good	3–5†	..	..
47	Shiloh silt loam	18	Nearly level	Very slow	Slow	Acid	Medium	High	Fair	3	..	..
48	Ebbert silt loam	18	Nearly level	Very slow	Slow	Acid	Low	Medium	Good	6	B	B
70	Beaucoup clay loam, first bottom	19	Nearly level	Very slow	Slow	Neutral	Medium	Medium	Fair	4–10*	B	A
72	Sharon loam, first bottom	19	Nearly level	Slow	Moderate	Acid to neutral	Medium low	Medium	Fair	5	B	A
75	Drury fine sandy loam, bottom	20	Nearly level	Slow	Moderate	Neutral	High	Low	Good	4	..	..
84	Okaw silt loam, terrace	21	Nearly level	Very slow	Very slow	Acid	Low	Low	Poor	10	C	C
86	Keyesport silt loam	21	Nearly level	Slow	Slow	Acid	Low	Low	Good	7–8	B	B
92	River sand, bottom	21	Gently rolling	Moderate	Rapid	Neutral	Low	Low	Poor	10	C	B
94	Limestone outcrop	22	.....	.....	.....	.....	.....	.....	.....	....	C	C
108	Bonnie silt loam, bottom	22	Nearly level	Slow	Moderate	Acid	Low	Low	Fair	5–10*	B	A
109	Racoon silt loam, terrace	22	Nearly level	Slow	Moderate	Acid	Low	Low	Fair	7	B	B
110	Venedy silt loam, terrace	23	Nearly level	Slow	Moderate	Acid	Low	Medium	Good	6	A	A
111	Ora silt loam	23	Nearly level	Very slow	Very slow	Acid	Low	Low	Fair	8	B	C
112	Putnam silt loam	24	Undulating	Slow	Very slow	Acid	Low	Low	Fair	6–8†	B	C
113	Cox silt loam	25	Gently rolling	Moderate	Slow	Acid	Low	Low	Good	6–7†	B	B
121	Wade silt loam	25	Nearly level	Very slow	Very slow	Acid	Low	Low	Fair	8	C	C
122	Eroded clay loam	26	Strongly rolling to steep	Rapid	Very slow	Acid	Low	Low	Poor	10	C	C
127	Harrison silt loam	26	Undulating to gently rolling	Moderate	Moderate	Acid	Medium low	Medium	Good	3–5†	..	..

(Table is concluded on page 36)

TABLE 2.—ST. CLAIR COUNTY SOILS: CHARACTERISTICS, PROPERTIES, AND ADAPTATION—*Concluded*

Type No.	Type name	See page[1]	Topography[2]	Drainage[3]		Reaction	Available phosphorus	Organic matter	Response to treatment	Productivity indexes[4]		
				Surface	Under					Field crops	Pasture	Forest
128	Douglas silt loam	27	Rolling	Rapid	Moderate	Acid	Medium low	Low	Good	5	A	A
161	Newart silt loam, bottom	27	Undulating	Moderate	Moderate	Neutral	Medium	Medium	Fair	4	..	..
162	Gorham clay loam, bottom	28	Gently rolling	Moderate	Moderate	Neutral	Medium	Medium	Fair	5	B	A
164	Bluford silt loam, immature phase	28	Gently rolling	Moderate	Moderate	Acid	Low	Low	Good	5–7†	B	A
165	Wynoose silt loam, immature phase	29	Undulating	Slow	Slow	Acid	Low	Low	Fair	7–8†	B	B
168	Flora silt loam, terrace	29	Undulating	Slow	Very slow	Acid	Low	Low	Fair	8	C	C
169	Freeburg silt loam, terrace	29	Gently rolling	Slow	Slow	Acid	Low	Low	Good	7	B	A
170	Breese silt loam	30	Nearly level to undulating	Slow	Slow	Acid	Medium low	Low	Fair	4–6	B	B
175	Unity sandy loam, terrace	30	Rolling	Rapid	Rapid	Acid	Low	Low	Fair	8	B	A
177	Orio silt loam, terrace	31	Nearly level	Slow	Slow	Acid	Medium low	Medium	Fair	4	..	..
179	Lentz silt loam, terrace	31	Undulating	Slow	Very slow	Acid	Low	Low	Fair	8	B	C
180	Dupo silt loam, bottom	31	Undulating	Slow	Moderate	Neutral	Medium	Medium	Fair	3	..	..
181	Riley fine sandy loam, bottom	31	Gently rolling	Rapid	Rapid	Neutral	Medium low	Low	Good	4–6	B	A
214	Ava silt loam, immature phase	32	Rolling	Rapid	Moderate	Acid to neutral	Medium low	Low	Good	5–7†	A	A
216	Eroded silt loam in youthful and immature areas	33	Strongly rolling to steep	Rapid	Moderate	Acid to neutral	Medium to high	Low	Poor	7–10	B	A

[1]For description of soil type turn to page indicated.

[2]Topography is expressed by the following terms based on the respective slopes: *nearly level*, less than .5 percent slope; *undulating*, .5 to 1.5 percent; *gently rolling*, 1.5 to 3.5 percent; *rolling*, 3.5 to 7 percent; *strongly rolling*, 7 to 15 percent; *steep*, greater than 15 percent.

[3]Of the terms used to express drainage, *moderate* expresses the most desirable drainage.

[4]The index number assigned to a soil type for production of field crops is based on the ability of the type to produce the major crops grown in the region, without soil treatment but with the soil in a cleared and drained condition. The scale used is 1 to 10, with the *most productive soil* in the state being rated as 1, and the *least productive* as 10. The indexes for pasture and forest are indicated by A, B, and C, with A signifying the best and C the poorest.

*Index is influenced by variations in drainage.

†Index number increases with distance from Mississippi bluffs.

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